*Tribe Dendrothripini

Antennal segments, except the terminal two, short and rounded. Metafurca large and obvious, forming a U shaped chitinized structure, the arms extending anteriorly to mesofurca. Abdominal tergites with median pair setae closely situated, distance shorter than setae length.

Genus *Dendrothrips* Uzel

Dendrothrips Uzel, 1895: 159. Type species: *Thrips ornata* Jabl., 1894.

Head short and wider than long, vertex depressed between compound eyes. Antennae 8 or 9-segmented, segments III and IV with simple or forked sense cone, segments III-VI with microtrichia. Pronotum with transverse striae, without major setae. Forewing anterior margin curved downward to meet posterior margin, costal setae only on median portion, lacking on basal and apical ends, tip of apex with no seta. Laterals of abdominal tergites reticulated. Over 50 species in the world.

Key to species of *Dendrothrips* in Taiwan

1. Antennal segments III and IV each with a simple sense cone; forewing dark, with a median transparent band ..... *minowai*
-- Antennal segments III and IV each with a forked sense cone 2

2. Forewing with 4 brown bands; abdominal tergites without color spots ..... *maltimaculatus*
-- Forewing without obvious dark or transparent bands; abdominal tergites III-VI with grayish spots..... *guttatus*

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* See footnote on p. 75.

Dendrothrips guttatus Wang (Fig. 26)

Dendrothrips guttatus Wang, 1993a: 254-256.

Female body length 0.9 mm on slide. Head and thorax yellowish brown, abdomen whitish yellow, laterals of abdominal tergites II, VII and VIII grayish yellow, 3 grayish spots on each side of tergites III-VI; antennae grayish yellow, distal end of segment V and segments VI-VIII brown. Fore and mid femora grayish brown, hind femora brown, paler on base; tibiae and tarsi whitish yellow, mid tibiae light brown. Forewings paler on median and subapical areas, basal portion transparent; major setae light brown.

Head wider than long, dorsum with irregular reticulations and inner dots. Ocellar setae short. Maxillary palpi 2-segmented. Antennae 8-segmented, segments III and IV with forked sense cone, sense cone on inner side of VI reach base of VIII.

Pronotum broad, covered with reticulations and inner dots, no major setae. Mesonotum with dense transverse striae; metanotal triangle with dotted reticulations. Forewing without microtrichia, vein setae minute.

Median of abdominal tergites II-VIII smooth, laterals with reticulations; reticlulated sculpture obvious on tergites II, III, VII and VIII, dots inside reticulations; reticulations on tergites IV-VI weak; median pair setae on tergites II-VIII longer posteriorly, close to each other on tergite VI, posterior comb present on median of tergite VIII, lacking on laterals; tergite X complete.

Male unknown.

Distribution: Taiwan.

Habitat: *Aleurites moluccana*.

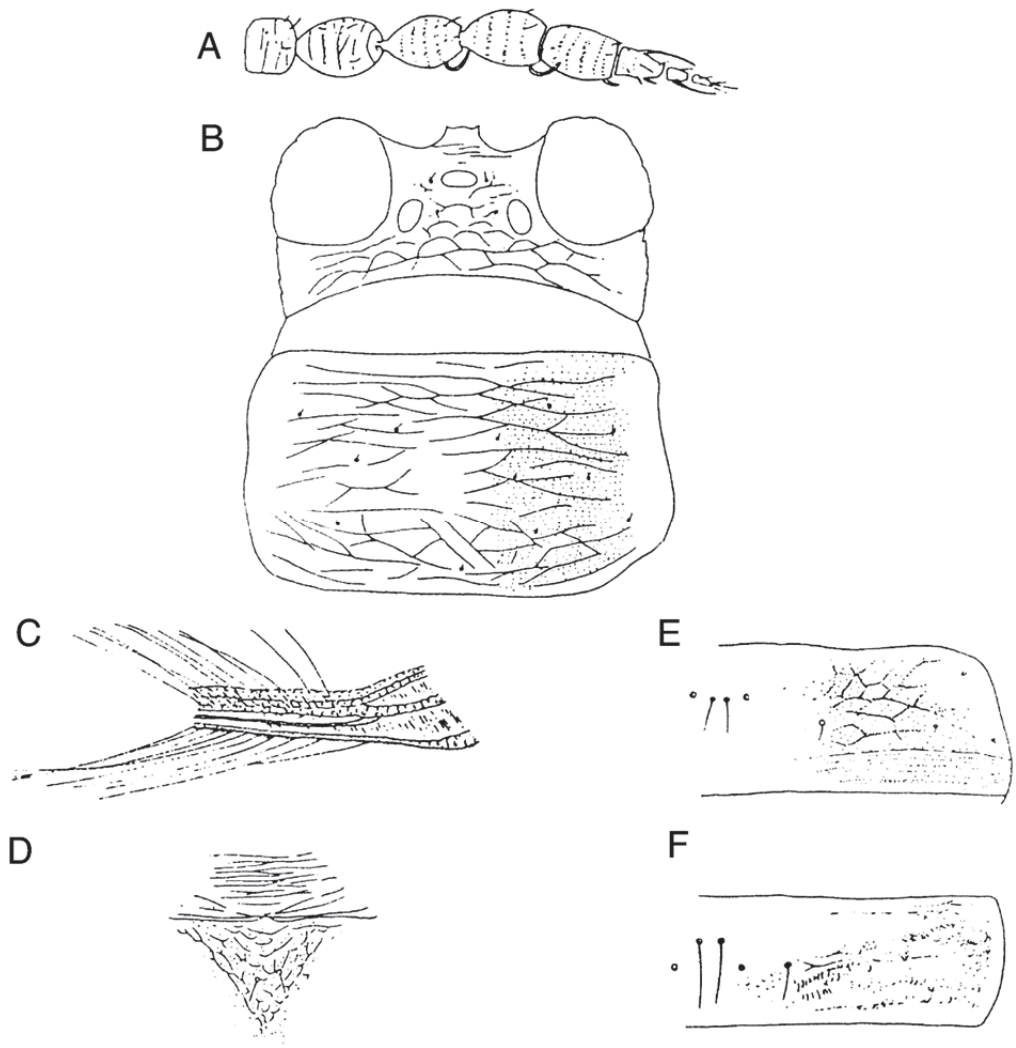

Fig. 26. *Dendrothrips guttatus* (♀) A. left antenna; B. head and pronotum; C. portion of forewing; D. median of meso- and metanotum; E. median and right lateral of tergite II; F. median and right lateral of tergite V.

Dendrothrips maltimaculatus Nonaka & Okajima (Fig. 27)

Dendrothrips maltimaculatus Nonaka & Okajima, 1992: 110-113.

Female body length 1.1 mm on slide. Head, thorax, legs and tergite II brown, tergites III, VII-IX grayish brown, tergites IV-VI yellow, each tergite with 2 pairs of spots; forewing transparent, with 4 brown bands, basal band broadest; antennal segments II, VI-VIII brown, I and V grayish brown, III and IV yellowish brown.

Head wider than long, dorsum with irregular reticulations with inner dots. Ocellar setae short. Antennae 8-segmented, segments III and IV with forked sense cone, sense cone on inner side of VI reach apex of VIII.

Pronotum broad, covered with reticulations with dots inside, no major setae, 6 pairs of posterior marginal setae, all short. Mesonotum with transverse striae, with inner dots; longitudinal striae on metanotum with dots. Forewing without microtrichia, upper vein with 19-23 setae, lower vein with 2-4 setae.

Abdominal tergite I smooth; laterals of tergite II clearly reticulated, with dots inside; laterals of tergites III-VI with weak reticulations; tergite VII with clear reticulations; posterior comb on tergite VIII present on median, lacking on laterals; tergite X no split.

Male body length 0.8 mm on slide. Color similar to female but paler, reticles weaker. Forewing with 3 brown bands.

Distribution: Taiwan, Japan.

Habitat: *Quercus* sp.

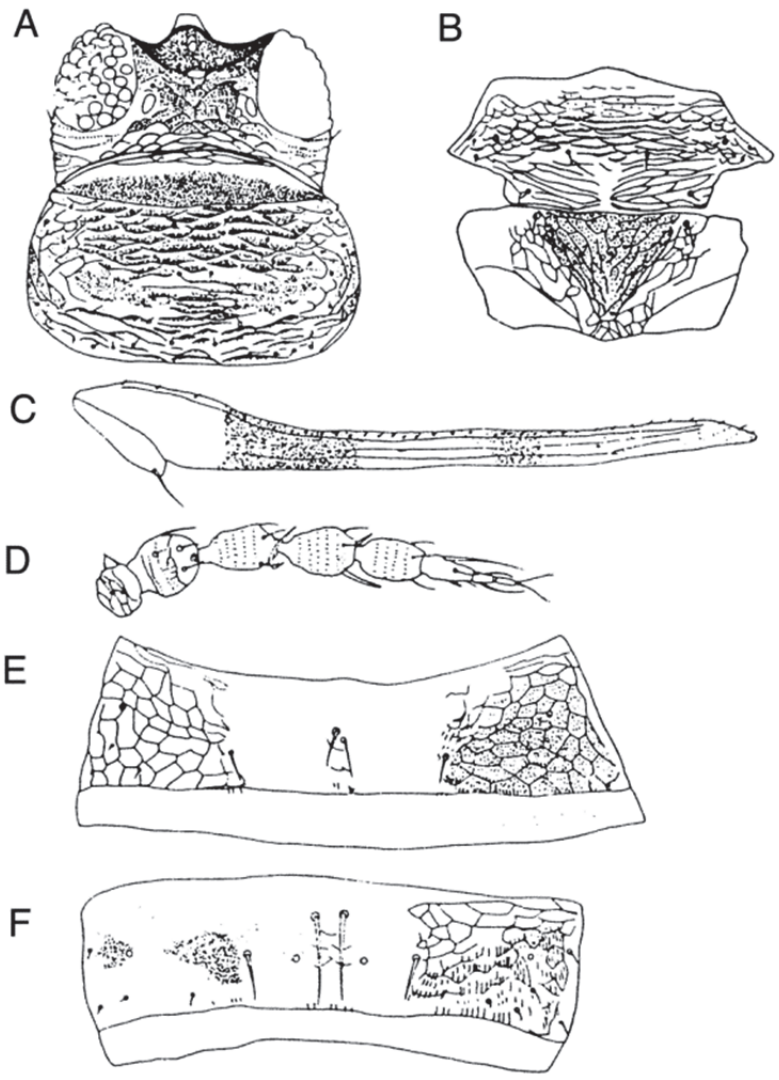

Fig. 27. *Dendrothrips maltimaculatus* (♀) A. head and pronotum; B. meso- and metanotum; C. forewing; D. right antenna; E. tergite II; F. tergite VI. (Nonaka & Okajima, 1992)

Dendrothrips minowai Priesner (Fig. 28)

Dendrothrips minowai Priesner, 1935b: 353.

Female body length 1.0 mm on slide. Grayish brown, compound eyes with red pigment, abdominal segments VIII-X paler; antennal segment I grayish yellow, II grayish brown, III-V whitish yellow but distal end of V darker, VI-VIII grayish brown; forewing dark gray, a transparent band near median; legs grayish brown, fore legs paler than mid and hind legs.

Head wider than long, dorsum with clear reticulated sculpture, posterior ocelli wide apart, ocellar setae each situated in front of posterior ocellus, out of triangular area; no occular setae. Maxillary palpi 2-segmented. Antennae 8-segmented, segments III and IV with short simple sense cone, sense cone on inner lateral of VI reach or even exceed apex of VIII.

Pronotum broad, covered with reticulations, no major setae, anterior and posterior angle with a major seta, 3 pairs of posterior marginal setae, all short. Forewing vein setae minute, upper vein with 6-7 setae, 3 distal setae, about 38 costal setae.

Abdominal tergite I and laterals of tergites II-X reticulated; median pair of setae on tergite I minute and further apart, median setae on tergites II-VIII closer together; median setae on tergites II-IV short, length (on slide) not reach posterior margin of the segment; length of median setae on tergites V-VIII exceed posterior margin of the segment; posterior comb on tergite VIII present on median, lacking on laterals; tergite X complete. Sternites without discal setae.

Male unknown**.**

Distribution: Taiwan, China, Japan.

Habitat : *Thea sinensis*, *Diospyros kaki*.

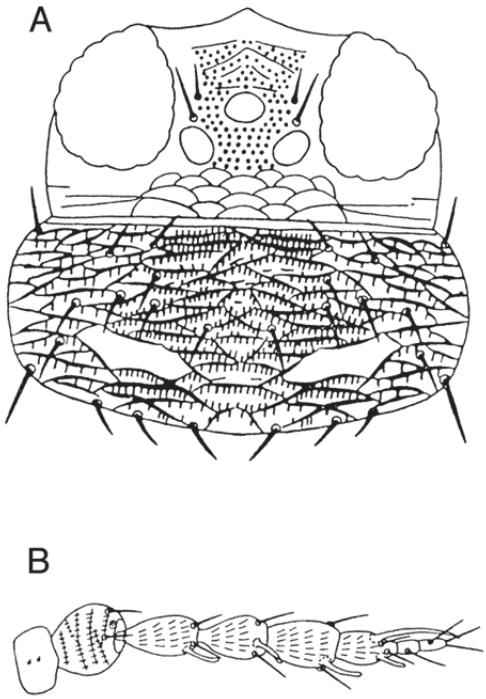

Fig. 28. *Dendrothrips minowai* (♀) A. head and pronotum; B. left antenna. (Chen, 1979)

Genus *Pseudodendrothrips* Schmutz

Pseudodendrothrips Schmutz, 1913: 992, 998. Type species: *Pseudodendrothrips ornatissima* Schmutz, 1913.

Head short and broad, antennae 8 or 9-segmented, segments III and IV with forked sense cone. Pronotum with transverse striae, one major seta on each of posterior angle. Apical portion of anterior margin of forewing not curve downwards, costal setae complete from base to apex, tip of apex with a seta. Laterals of abdominal tergites with transverse striae and microtrichia. About 20 species in the world.

Key species of *Pseudodendrothrips* in Taiwan

1. Pronotum reticulations with minute wrinkles ..... *fumosus*
-- Pronotum reticulations without wrinkles 2

2. Body grayish white; antennae 8-segmented ..... *mori*
-- Body brown; antennae 9-segmented ..... *lateralis*

Pseudodendrothrips fumosus Chen (Fig. 29)

Pseudodendrothrips fumosus Chen, 1980: 171, 172.

Female body length 0.95 mm on slide. Yellowish brown; antennal segments I and II brown, III yellowish brown, IV-VI grayish yellow and distal ends darker, VII-IX yellowish brown; posterior 2/3 of mesonotum grayish yellow; abdominal laterals brown, median yellowish brown, antecostal ridge on tergites III-VIII brown; forewings gray, base and apical end paler; femora brown, tibiae grayish brown but yellow on both ends, tarsi yellow.

Head wider than long, median of dorsum with transverse striae, minute wrinkles between striae; 2 pairs of anteocellar setae. Mouth cone rounded, reach posterior margin of pronotum; maxillary palpi 2-segmented. Antennae 9-segmented, segment I quadrate, II largest and rounded, II-VI with dorsum microtrichia, III and IV with forked sense cone.

Prothorax broad, pronotum with transverse striae and minute longitudinal striae; 2 pairs of major setae on posterior angles, outer pair longer, 2 pairs of posterior marginal setae. Mesonotum covered with transverse striae, median pair setae situated near posterior margin; metafurca large. Forewing costal setae 28, upper vein setae 7, well- developed. Hind tarsus quite long, longer than fore or mid tarsi, 2 spurs on distal end of hind tarsus.

Anterior median of abdominal tergite I, laterals of tergites II-VII, and anterior laterals of tergite VIII with transverse striae; striae on tergites II-VII densely arranged and with inner minute longitudinal wrinkles. Median pair setae on tergites II-VIII close to each other, and turned longer towards abdominal terminal. Rows of microtrichia on laterals and posterior median of tergite II-VII, laterals and posterior portion of tergite VIII, and posterior half of tergites IX and X. Tergite X complete. Sternites II-VI and laterals of sternite VII with transverse striae and microtrichia.

Male unknown**.**

Distribution: Taiwan.

Habitat: *Morus* spp.

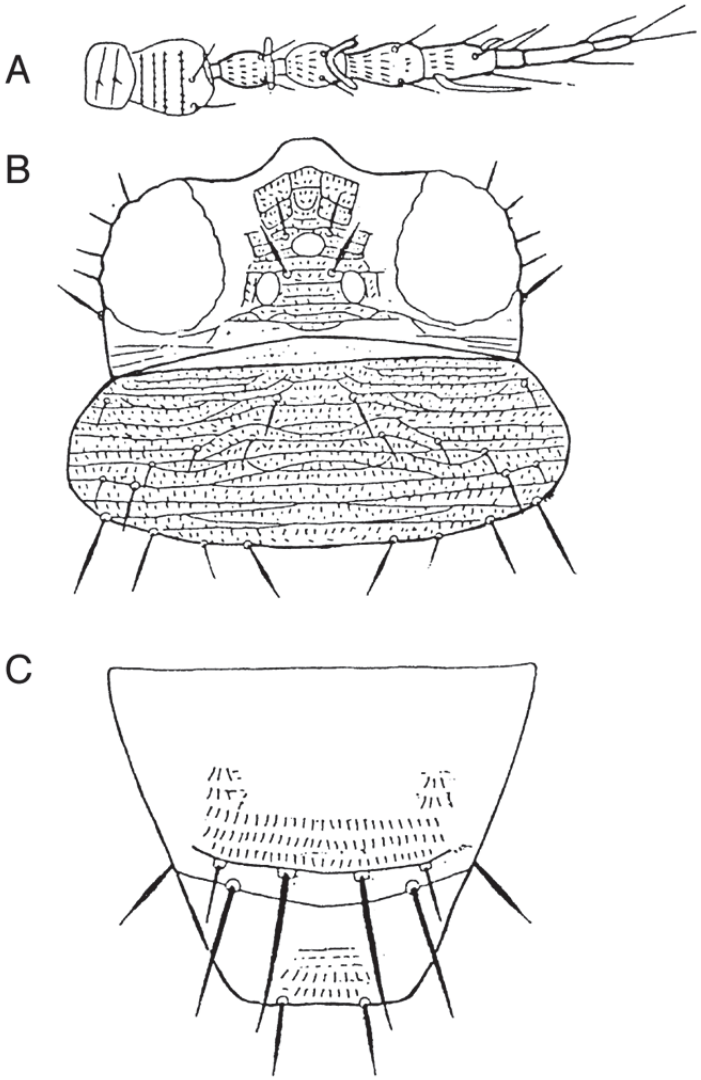

Fig. 29. *Pseudodendrothrips fumosus* (♀) A. left antenna; B. head and pronotum; C. tergites IX and X. (Chen, 1980)

Pseudodendrothrips lateralis Wang (Fig. 30)

Pseudodendrothrips lateralis Wang, 1993a: 253, 254.

Female body length 0.7-0.95 mm on slide. Head and thorax reddish brown, abdomen yellow, lateral 2/3 of tergite II-VII grayish black and especially darker on posterior margin. Antennal segments I-III yellowish brown, IV-IX grayish brown, bases of IV-VI paler. All femora and tibiae mainly brown, both ends of tibiae yellowish, tarsi yellow. Forewings grayish, base and apical end paler.

Head wider than long, ocellar setae short, interocellar setae arising between anterior half of 2 posterior ocelli. median of dorsum with transverse striae. Maxillary palpi 2-segmented. Antennae 9-segmented, segment I quadrate, segment II largest and rounded, segments II-VI with dorsum microtrichia, III and IV each with a forked sense cone, single sense cone each on inner base of VI and outer lateral of VIII, the latter exceed IX.

Prothorax broad, pronotum with transverse striae, one pairs of major setae on posterior angles, 3 pairs of posterior marginal setae. Forewing basal 1/4 and apical 1/9 without costal setae, median with 19-25 costal setae; upper vein with 6 setae, wide apart; lower vein without setae. Hind tarsus longer than fore or mid tarsus, distal end with 2 spurs.

Laterals of abdominal tergites II-VIII with rows of microtrichia, especially clear on tergite II and V-VII; median pair setae on tergites II-VIII close to each other, and longer towards abdominal terminal; reticles on median of tergites II-VII weak; posterior comb on tergite VIII complete; tergite X complete. Sternites without discal setae.

Male body length 0.67 mm on slide. Head, thorax and laterals of abdominal segments I and II reddish brown, the rest of abdomen yellowish white except laterals of segments VI-VIII grayish.

Distribution: Taiwan.

Habitat: *Morus* spp., *Acacia confusa*.

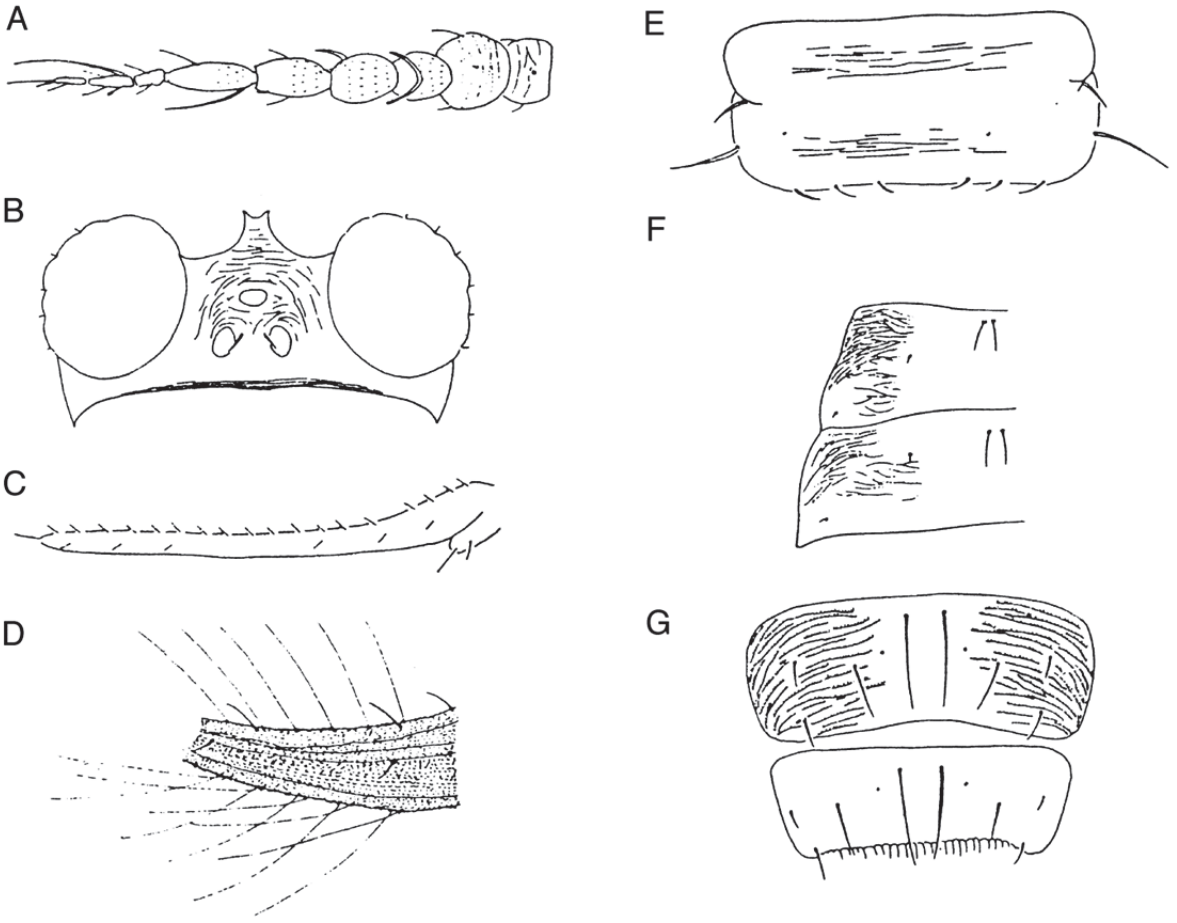

Fig. 30. *Pseudodendrothrips lateralis* (♀) A. right antenna; B. head; C. forewing; D. enlarged portion of forewing; E. pronotum; F. median and left of tergites II and III; G. sternites VII and VIII.

Pseudodendrothrips mori (Niwa) (Fig. 31)

Belothrips mori Niwa, 1908: 180.

Female body length 1 mm on slide. Body in very light color, almost transparent; Antennal segment I similar to body color, II light brown, the rest segments darker towards terminal; ocelli with red pigment; forewings whitish yellow or grayish yellow.

Head wider than long, median of dorsum with weak transverse striae. Maxillary palpi 2-segmented. Antennae 8-segmented, segment I quadrate, II largest and rounded, III and IV oval shaped and each with a forked sense cone, VII slender, some specimen with transverse suture (look like 9-segmented), VIII slender, about half length of VII.

Prothorax broad, pronotum with dense transverse striae, median laterals form a smooth area, 2 major setae on each of posterior angle, 2 pairs of posterior marginal setae. Mesofurca without spinula, metafurca large. Forewing with 24 costal setae, upper vein with 3 basal setae, one median seta, 2 distal setae. Legs slender, tarsi one-segmented, hind tarsus longest.

Laterals of abdominal tergites II-IX and posterior portion of tergite X with rows of microtrichia; median pair setae on tergites II-VIII close to each other, and longer towards abdominal terminal; posterior comb on tergite VIII complete; tergite X complete. Sternites without discal setae.

Male structure and color similar to female. Abdominal tergite IX without stout setae; sternites without glandular area.

Distribution: Taiwan, China, Japan, US.

Habitat: *Morus* spp.

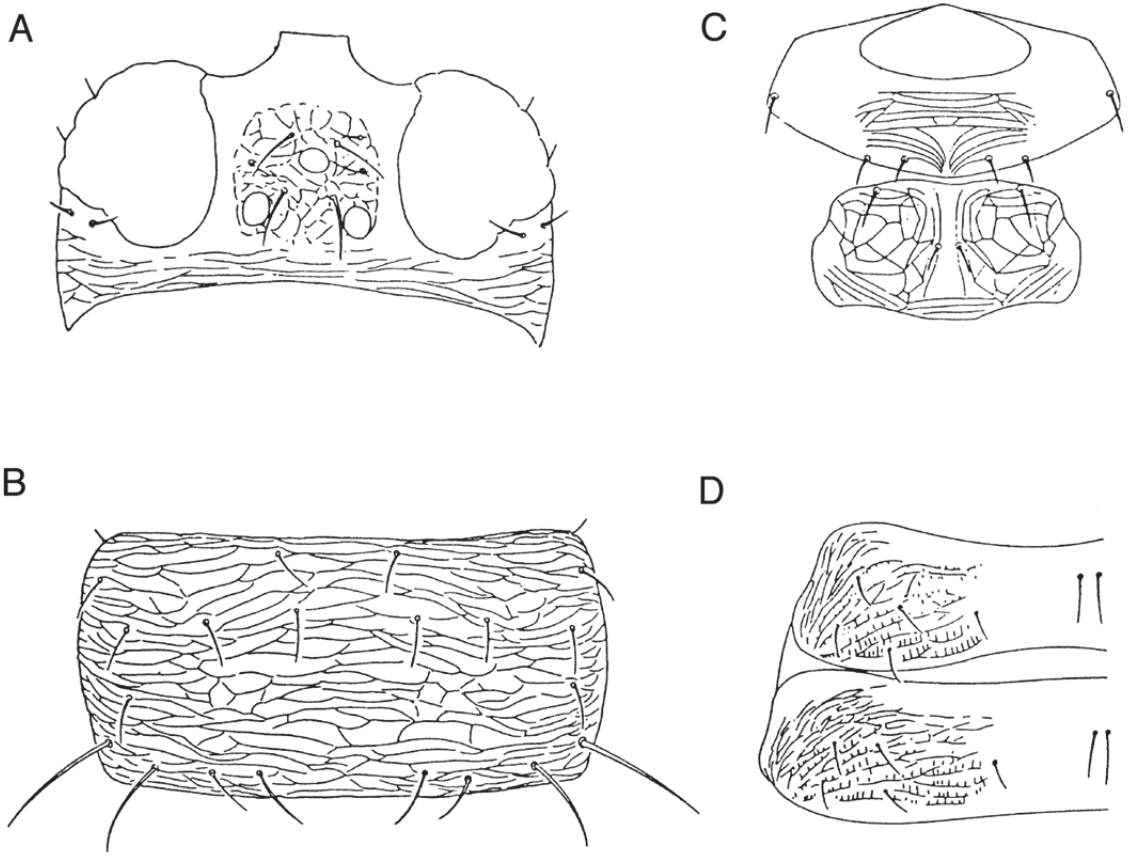

Fig. 31. *Pseudodendrothrips mori* (♀) A. head; B. pronotum; C. meso- and metanotum (Chen, 1980); D. median and left of tergites II and III.

*Tribe Sericothripini

Head dorsum and occiput clearly separated by an occipital apodeme. Pronotum with blotch; mesofurca with spinula, metafurca without spinula. Forewings with microtrichia, upper vein setae even and complete, lower vein with 0-2 setae. Abdominal tergites with dense microtrichia, laterals of antecostal ridge with protruded spots. Sternum of some species with microtrichia. Legs never reticulated.

Key to genus of *Sericothripini* in Taiwan

1. Metasternum divided into 2 parts by a Y shaped furca ..... *Hydatothrips*
-- Mesosternum complete ..... *Neohydatothrips*

Genus *Hydatothrips* Karny

Hydatothrips Karny, 1913b: 281.Type species: *Hydatothrips adolfifriderici* Karny, 1913.

Head wider than long. Antennae 8-segmented, segments III and IV with forked sense cone. Pronotum with blotch; metasternum divided into 2 plates by a Y-shaped bone. Laterals of abdominal tergites I-VII with dense microtrichia; tergites II-VI with posterior comb, longer on laterals, short or lacking on median, posterior comb on tergite VIII complete. Median pair setae on tergites II-IV closely situated, those setae on tergites V-VIII longer, and further apart. About 40 species in the world.

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* See footnote on p. 75.

Key to species of *Hydatothrips* in Taiwan

1. Antennae 7-segmented; abdominal segment VI in lighter color; pronotal blotch with both anterior and posterior sides concaved greatly .....*meriposa*
-- Antennae 8-segmented; abdominal segment VI not lighter; blotch concave only on anterior margin or not concaved 2

2. Body yellowish, abdominal segment IV in lighter color; 4 pairs of pronotal anterior marginal setae, distance between 2 median setae shorter than length of seta .....*flavidus*
-- Body brownish, abdominal segment IV and V, or V only, in lighter color; 2 pairs of pronotal anterior marginal setae, distance between 2 median setae longer than length of seta 3

3. Pronotal reticulations with inner dots; abdominal segment V paler .....*liquidambara*
-- Pronotal reticulations without inner dots; abdominal segment IV and V paler ..... *ekasi*

Hydatothrips ekasi Kudo (Fig. 32)

Hydatothrips ekasi Kudo, 1991: 520-523.

Female body length 1.2-1.3 mm on slide. Head and thorax dark brown, abdominal tergites I-III, VI, X brown, IV and V yellow, VII-IX dark brown, antecostal ridges of tergites II-VII dark brown. Antennal segments I, II, III except distal end, basal 1/4 of IV yellow, the rest brown. Forewing brown, with a subbasal transparent area. Fore femora grayish brown, mid and hind femora darker, all tibiae and tarsi yellow.

Head short, dorsum with dense transverse striae. Occiput 3 times as long as rest of head, with reticulated sculpture on anterior portion, without inner wrinkles; interocellar setae arising near inner side of anterior margin of posterior ocelli. Mouth cone narrow and long, reach

anterior margin of mesosternum; maxillary palpi 3-segmented, slender. Antennae 8-segmented, segments III and IV with forked sense cone.

Pronotal blotch covered with dense transverse striae, 4 pairs of anterior marginal setae arranged on one row near margin, one seta on lateral margin, 3 pairs of posterior marginal setae; pronotum outside of the blotch reticulated, anterior reticulations with inner dots; 2 pairs of pronotal anterior setae, distance between 2 median setae longer than length of setae. Reticulations on mesonotum and metanotum with dotted wrinkles. Forewing upper vein setae complete, lower vein without setae. Tarsi 2-segmented.

Laterals of abdominal tergites I-VII with dense microtrichia; tergites I-VI with posterolateral comb; median pair setae on tergites I-IV close to each other, median pair setae on tergites V-VIII further apart, and setae longer; sublateral of antecostal ridge on tergites II-VII with forwardly protruded spots, more significant on tergite VII; posterior comb on tergite VIII even and complete. Sternites without discal setae.

Male color and shape similar to female but paler; median of abdominal tergites I-VII without dense microtrichia; sternites V-VII each with a transverse glandular area.

Distribution: Taiwan, Japan.

Habitat: *Kummerovia striata*, *Dioscorea benthamii*, *Macaranga tanarius*.

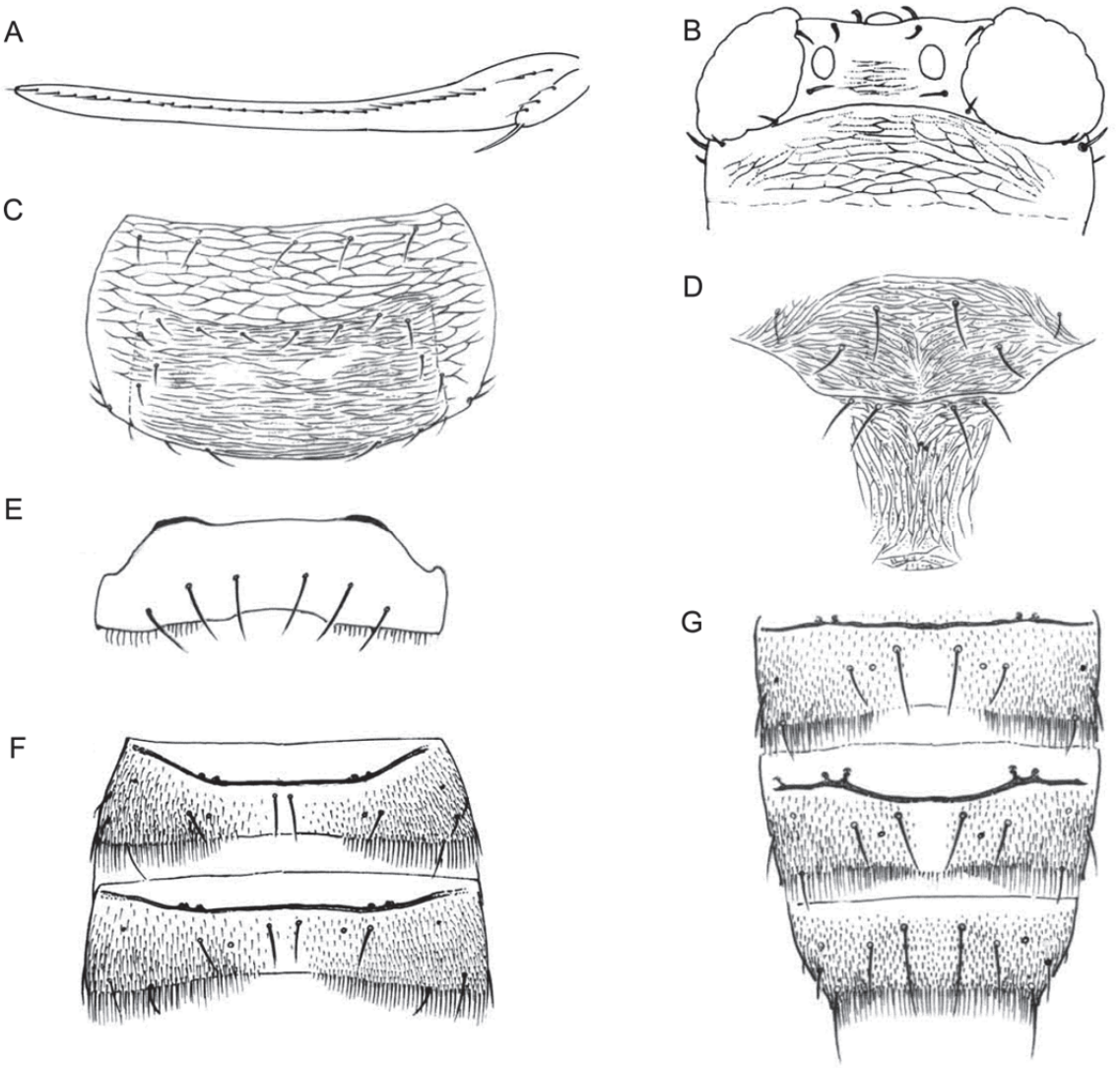

Fig. 32. *Hydatothrips ekasi* (♀) A. forewing; B. head; C. pronotum; D. meso- and metanotum; E. sternite VII; F. tergites III and IV; G. tergites VI-VIII.

Hydatothrips flavidus Wang (Fig. 33)

Hydatothrips flavidus Wang, 2007: 53-54.

Female body length 1 mm on slide. Light yellow to brownish yellow, abdominal tergites II, III, V and VI grayish brown, IV whitish yellow, VII-X yellow, antecostal ridges on tergites II-VI dark brown, on tergite VII grayish brown; antennal segments I-III yellow, IV and base of V grayish brown, the rest segments brown; forewings brown with subbasal transparent area; legs yellow.

Head short, dorsum with dense transverse striae and wrinkles inside. Occiput large, anterior margin reach compound eyes, transverse striae on anterior portion, followed by reticulated sculpture, weak markings inside. Two pairs of anteocellar setae, interocellar setae situated in front of posterior ocelli. Mouth cone narrow and long, reach posterior margin of pronotum; maxillary palpi 3-segmented, slender. Antennae 8-segmented, segments III and IV with forked sense cone.

Pronotal blotch covered with dense transverse striae, 3 pairs of anterior marginal setae, one pair of anterior submarginal setae, one seta each on lateral margin, 2 pairs of posterior marginal setae. Anterior reticulations on pronotum with sparse dots. Reticulations on mesonotum and metanotum with dotted wrinkles. Forewing upper vein setae complete, lower vein with 2 setae. Tarsi 2-segmented.

Laterals of abdominal tergites I-VIII with dense microtrichia; tergites II-VII with posterior comb, none or very short in median; median pair setae on tergites I-IV close to each other, those on tergites V-VIII longer and further apart; sublateral of antecostal ridge on tergite II-VII with forwardly protruded spots, more significant on tergite VII; posterior comb on tergite VIII complete. Sternites without discal setae.

Male color and shape similar to female; body length 0.8 mm on slide; sternites VI and VII with transverse glandular area.

Distribution: Taiwan.

Habitat: *Acacia confuse*, *Phyllostachys* sp.

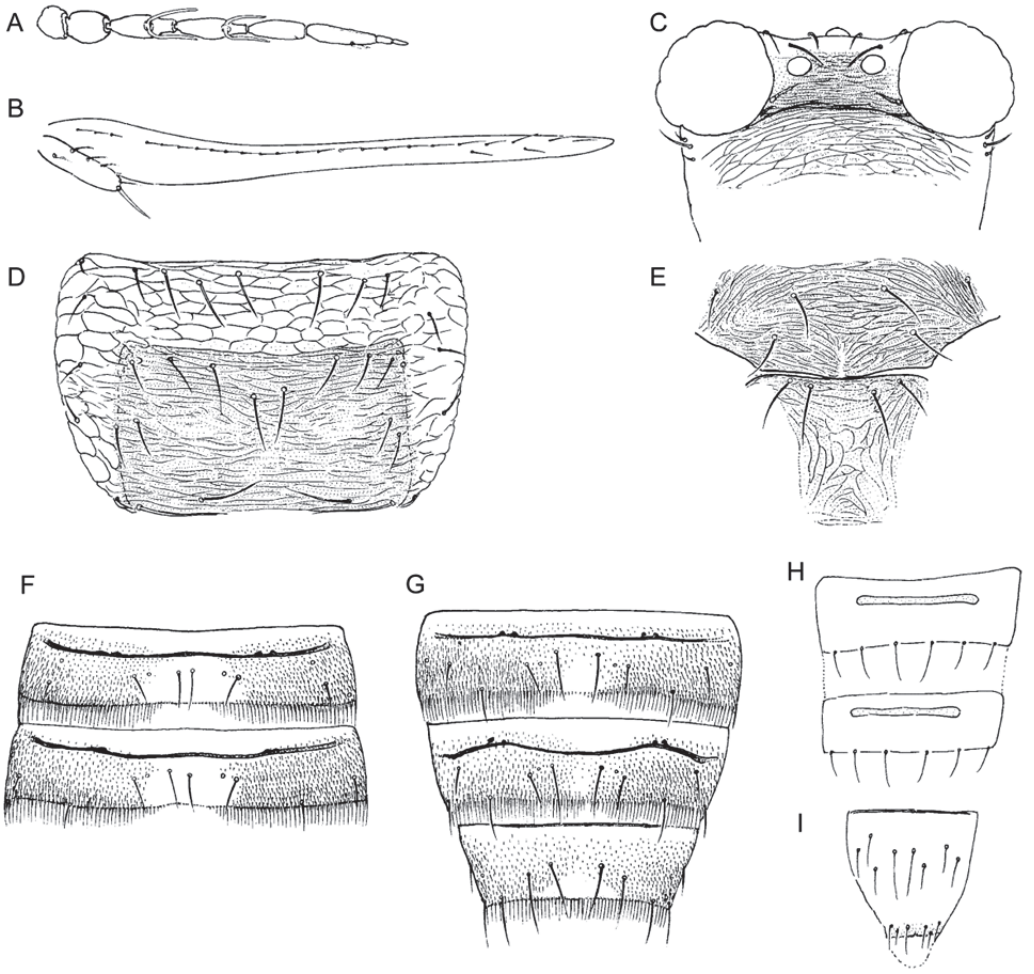

Fig. 33. *Hydatothrips flavidus* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. meso- and metanotum; F. tergites III and IV; G. tergites VI-VIII; (♂) H. sternites VI and VII; I. tergite X.

Hydatothrips liquidambara Chen (Fig. 34)

Hydatothrips liquidambara Chen, 1977a: 145-147.

Female body length 1.2-1.4 mm on slide. Head and thorax brown, abdominal tergites I-IV and VI-IX grayish brown, tergite V yellow with median darker, tergite X grayish yellow, antecostal ridges on tergites II-VII dark brown. Antennal segments I and II yellow, III grayish brown, IV brown except basal 1/4 yellow, V-VIII brown. Forewings brown, with subbasal transparent area. Fore femora yellow and brown in margins, mid and hind femora dark brown, all tibiae and tarsi yellow.

Head short, dorsum with dense transverse striae and clear wrinkles inside. Occiput large, longer than the rest of head, transverse striae on anterior portion, followed by reticulated sculpture, weak wrinkles inside, smooth near posterior margin. Two pairs of interocellar setae, interocellar setae situated near inner side of anterior margin of posterior ocelli. Mouth cone narrow and long, reach posterior margin of pronotum; maxillary palpi 3-segmented, slender. Antennae 8-segmented, segments III and IV with forked sense cone.

Pronotal blotch covered with dense transverse striae, 3 pairs of anterior marginal setae, arranged on one row near margin; 2-3 setae each on lateral margin; 2 pairs of posterior marginal setae. Reticulations on pronotum out of blotch with inner dots; 2 pairs of pronotal anterior setae, distance between 2 median setae longer than length of setae. Pronotal reticulations on mesonotum and metanotum with dotted wrinkles. Forewing upper vein setae complete, lower vein with 0-2 setae. Tarsi 2-segmented.

Laterals of abdominal tergites I-VII with dense microtrichia; tergites II-VII with posterior comb, short in median; median pair setae on tergites I-IV close to each other, median pair setae on tergites V-VIII further apart, and setae longer; sublateral of antecostal ridge on tergite II-VII with forwardly protruded spots, more significant on tergite VII; posterior comb on tergite VIII even and complete. Sternites without discal setae.

Male color and shape similar to female. Body length 0.9-1.1 mm on slide; sternites VI-VIII with transverse glandular area.

Distribution: Taiwan.

Habitat: *Morus australis*, *Piper betle*, *Cunnighamia* sp., *Phyllostachys* sp., *Manihot esculenta, Areca catechu*, grasses.

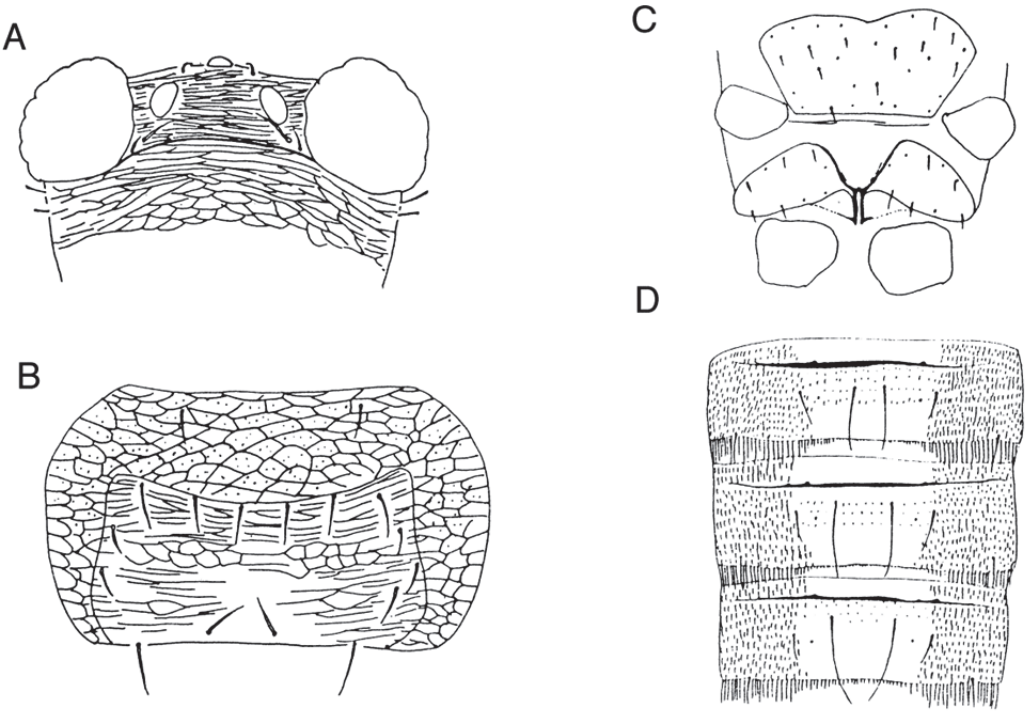

Fig. 34. *Hydatothrips liquidambara* (♀) A. head; B. pronotum; C. meso- and metanotum; D. tergites IV-VI.

Hydatothrips meriposa Wang (Fig. 35)

Hydatothrips meriposa Wang, 2007: 56-57.

Female body length 0.8 mm on slide. Yellowish brown, abdominal tergites I-V grayish brown, VI whitish yellow, VII-X brown, antecostal ridges on tergites II-VII dark brown; antennal segments I and II whitish yellow, basal half of III-V whitish yellow and distal portion grayish brown, VI &VII grayish brown; forewings brown but lighter in color toward apex, with subbasal transparent area; legs yellow, mid femora brown in median, hind femora brown and paler on both ends.

Head short, dorsum with dense transverse striae and wrinkles inside. Compound eyes not touching anterior margin of occiput, distance between compound eyes and occiput larger than length of occiput. Occiput short, with dense transverse striae. Two pairs of anteocellar setae, interocellar setae situated in front of posterior ocelli. Mouth cone narrow and long, reach posterior margin of pronotum; maxillary palpi 3-segmented, slender. Antennae 7-segmented, segments III and IV with forked sense cone.

Pronotal blotch concave greatly on anterior and posterior sides, covered with dense transverse striae, 2 pairs of anterior marginal setae, median pair setae situated on margin, 2 pairs of anterior submarginal setae, 2 setae each on lateral margin, one pair posterior marginal setae. Anterior reticulations on pronotum with inner dots, distance between 2 median setae 2-3 times longer than the setae. Reticulations on mesonotum and metanotum with dotted wrinkles. Forewing upper vein setae complete, lower vein with 2 setae. Tarsi 2-segmented.

Laterals of abdominal tergites with dense microtrichia; tergites II-VI without posterior comb, short on tergite VII; median pair setae on tergites I-VIII further apart and longer toward anal segments, but difference between I-IV and V-VIII not very clear as the other 3 species of this genus; sublateral of antecostal ridge on tergites II-VII with forwardly protruded spots, more

significant on tergite VII; posterior comb on tergite VIII even and complete. Sternites without discal setae.

Male unknown.

Distribution: Taiwan.

Habitat: *Murraya paniculata*.

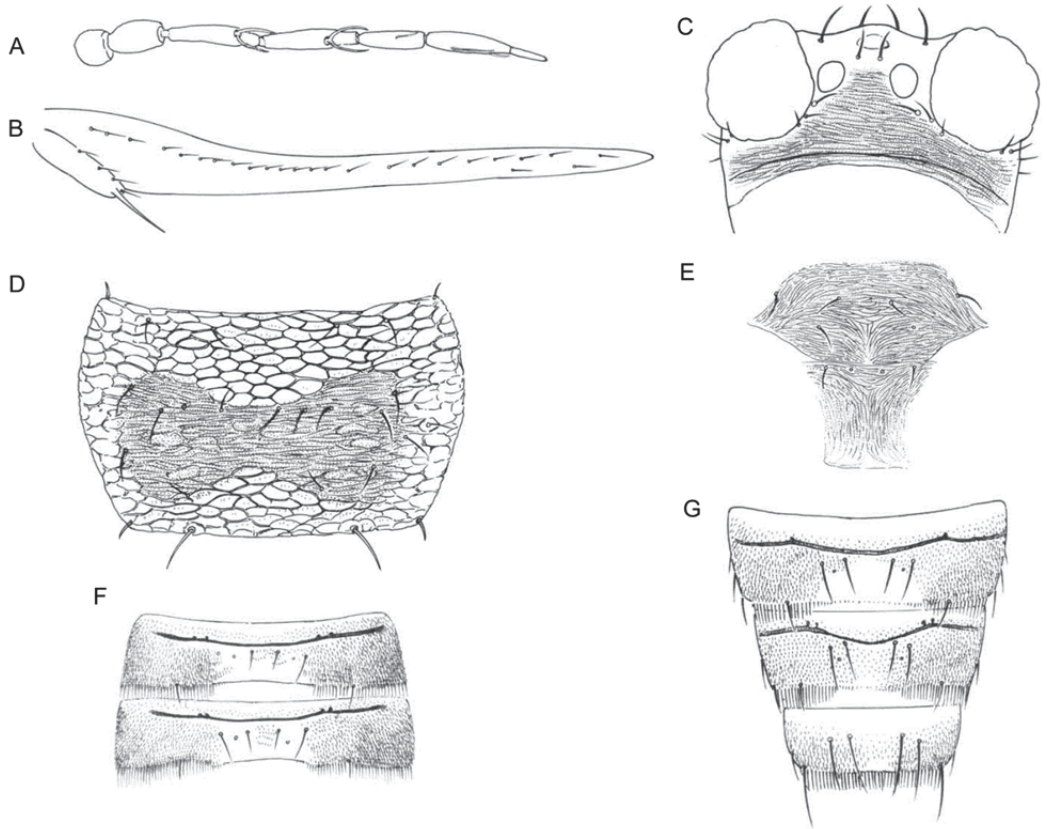

Fig. 35. *Hydatothrips meriposa* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. meso- and mtenotum; F. tergites III and IV; G. tergites VI-VIII.

Genus *Neohydatothrips* John

Neohydatothrips John, 1929: 33. Type species: *Neohydatothrips latereostriatus* John.

For convenient, *Hydatothrips* and *Neohydatothrips* are taken as genera as the old system. Kudo (1997) take *Hydatothrips, Neohydatothrips* as well as *Kazinothrips* and *Zonothrips* as subgenus of *Hydatothrips*. This genus is separated from *Hydatothrips* by metasternum not divided into 2 parts. About 105 species in the world.

Key to species of *Neohydatothrips* in Taiwan

1. Antennae 7-segmented ..... *plynopygus*
-- Antennae 8-segmented 2

2. Forewing lower vein without seta 3
-- Forewing lower vein with 1-2 setae 4

3. Forewing brown with subbasal, median and apical transparent areas ..... *samayunkur*
-- Forewing brown, with basal transparent area 5

4. Abdominal tergites with IV and V yellow, tergites I-III and VI with brown semi-elliptical areas clearly separated from median yellow areas ..... *tabulifer*
-- Abdomen yellow, tergites II-VI with lateral brown areas posterior to antecostal ridge ..... *gracilipes*

5. Pronotal reticulations outside blotch strongly transverse with ratio of length/width >10, abdominal tergites V and VI in light color ..... *medius*
-- Pronotal reticulations outside blotch transverse with ratio of length/width about 3-4, abdominal tergites VI in light color ..... *surrufus*

Neohydatothrips gracilips (Hood) (Fig. 36)

Sericothrips gracilipes Hood, 1924: 149

Female body length 1.2-1.3 mm on slide. Body generally yellow, pronotal blotch with brown markings; abdominal tergites II–VII with dark brown antecostal ridge, also brown areas laterally on these segments behind antecostal ridges; antennal segments grayish brown, III and basal halves of IV and V paler; legs grayish yellow; forewing
grayish yellow with a subbasal pale band.

Head short, cheeks about same length as compound eyes; interocellar setae situated behind anterior ocellus, inside ocellar triangular area. Antennae 8-segmented, III and IV with forked sense cone, V and VI with linear sense area, segment VII about half the length of VIII.

Pronotal blotch weakly sclerotized without a clear margin, posteroangular pair of setae on blotch well-developed, about same length as blotch. Mesonotum and metanotum with dense transverse or longitudinal striae. Anterior margin of metasternum straight. Forewing upper vein setae complete, lower vein without setae.

Abdominal tergites II–VII with posteromarginal combs present laterally but not medially; tergites VII and VIII with long and complete posteromarginal comb. Sternites I–VII with complete posteromarginal comb, without discal setae.

Male: unknown.

Distribution: Taiwan, Mexico, Costa Rica, Trinidad, Jamaica, Australia, Thailand, India.

Habitat: Malvaceae (particularly species of *Sida*), many specimens were taken in Taiwan from cotton (*Gossypium indicum*), the plant from which this thrips was originally described.

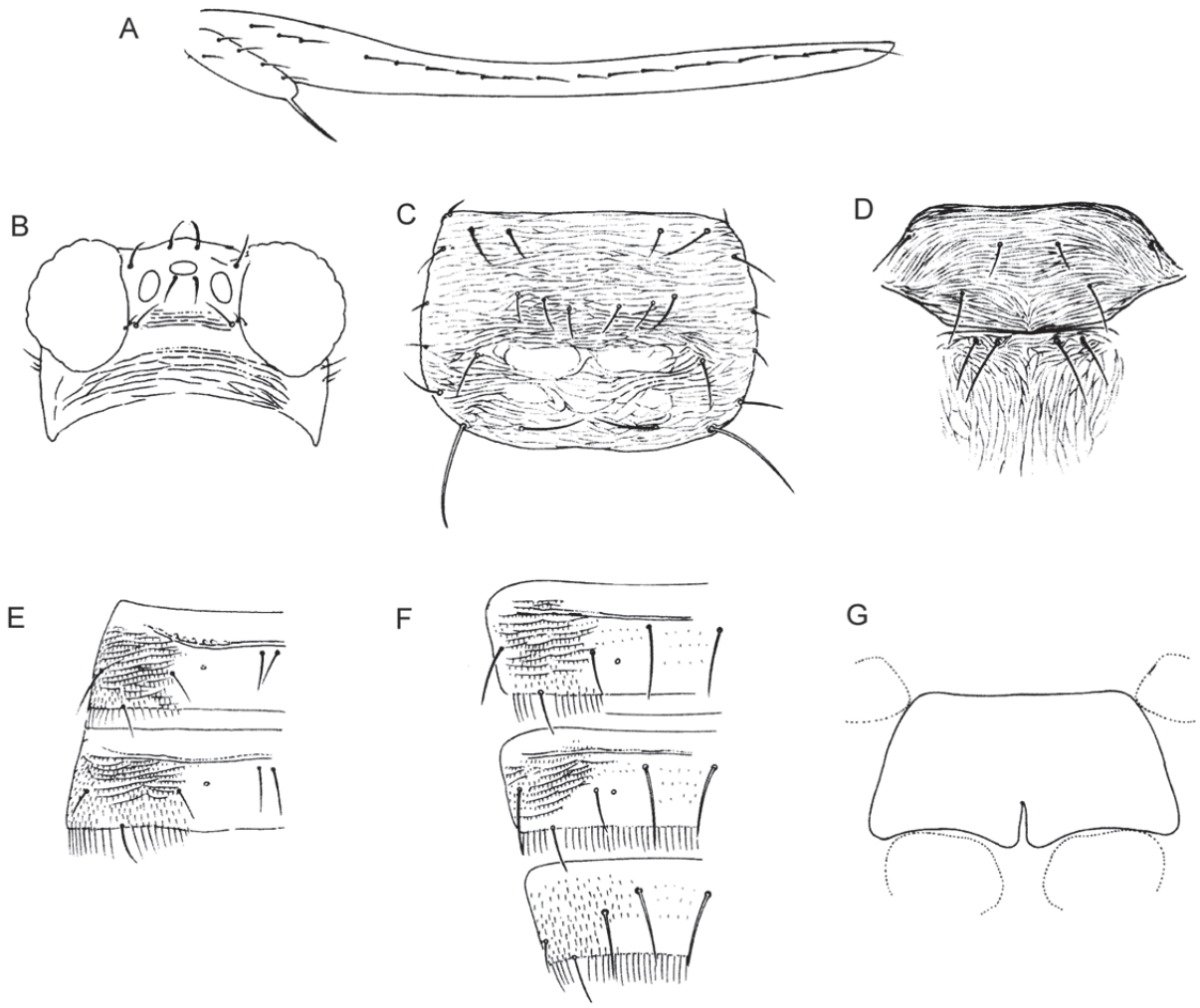

Fig. 36. *Hydatothrips gracilips* (♀) A. forewing; B. head; C. pronotum; D. meso- and metanotum; E. tergites II and III; F. tergites VI-VIII.; G. metasternum.

Neohydatothrips medius Wang (Fig. 37)

Neohydatothrips medius, 1994b: 257-259.
Neohydatothrips pectinarius Kudo, 1997; Jap J. Systematic Ent. 3(2): 338-339.

Female body length 1.2 mm on slide. Head and thorax dark brown, laterals of abdominal tergites I-IV dark brown, median light brown; tergites V and VI whitish to yellowish brown, tergites VII-X dark brown; antecostal ridges dark brown. Antennal segments I and II whitish yellow, III grayish brown, IV grayish yellow but distal end grayish brown, basal 1/2 of V grayish yellow and distal end grayish brown, VI-VIII brown; femora dark brown, tibiae and tarsi grayish yellowish brown; forewings brown with subbasal portion transparent.

Head short, anterior margin of occiput touch posterior margin of compound eyes, occiput longer than the rest of head, dense transverse striae on anterior portion, smooth but with minute black dots near posterior margin; reticulations on head and occiput with minute wrinkles. Interocellar setae situated in front of posterior ocelli. Mouth cone reach anterior margin of mesosternum; maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone, VI and VII with linear sensory area, II-VI with microtrichia.

Pronotal blotch covered with dense transverse striae, 4 pairs of anterior marginal setae, one pair of lateral setae, one pair of posterior angular setae, one pair of posterior marginal setae; marginal area of pronotum around the blotch with dotted transverse striae. Dense transverse striae on mesonotum and metanotum with dotted wrinkles. Forewing upper vein setae 3+18, lower vein with 2 distal setae.

Laterals of abdominal tergites I with dense microtrichia and posterior comb; microtrichia on laterals of tergites II-IV stronger and with minute longitudinal wrinkles; tergites V-VIII with microtrichia but median of V and VI smooth; posterior marginal comb on II-VII longer on laterals and very short on median; comb on tergite VIII even and complete. Median pair setae on

tergites I-IV close to each other and on V-VIII further apart. Sublateral of antecostal ridge on tergite II-VII with forwardly protruded spots, more significant on tergite VII. Anterior portion of sternite VII protruding forward. Without discal setae.

Male body length 0.8 mm on slide. Structure and color similar to female; abdominal sternites without glandular area; tergite IX with 4 pairs of long setae; tergite X with microtrichia.

Distribution: Taiwan.

Habitat: *Cannamomum camphora*, grasses.

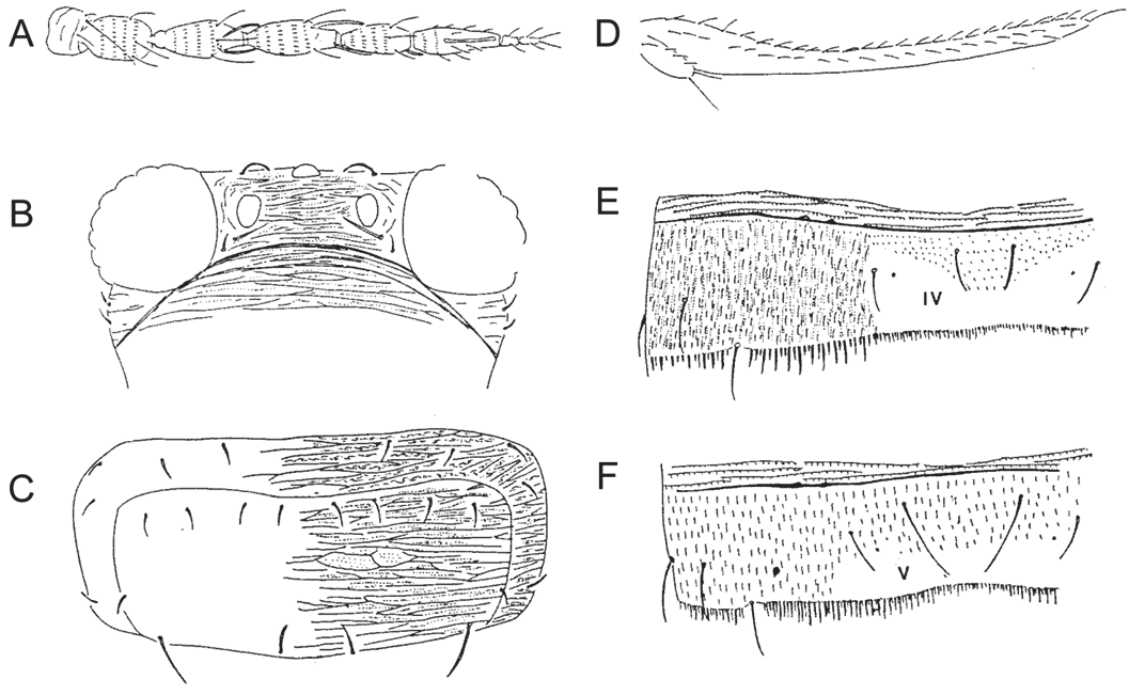

Fig. 37. *Hydatothrips medius* (♀) A. right antenna; B. head; C. pronotum; D. forewing; E. tergite IV; F. tergite V.

Neohydatothrips plynopygus (Karny) (Fig. 38)

Anaphothrips plynopygus Karny 1925: 29.
Zonothrips luridus Ananthakrishnan 1967: 115.

Female Body length 1.3 mm. Brown, abdominal tergites V–VI, median 1/3 to 1/4 of tergites I–VI yellowish brown, tergite X yellow; antecostal ridge broken medially on tergite I, pale medially on IV–VII or VIII; antennal segments I–V grayish white except distal ends of IV and V grayish, VI and VII grayish brown; all femora dark brown, tibiae and tarsi yellow; forewings brown with subbasal, submedian and apical pale bands. Interocellar setae situated between anterior and posterior ocelli, outside ocellar triangular area; occipital apodeme close to posterior margin of compound eyes, but not touching.

Pronotum including blotch covered with transversely reticulated striae, clear longitudinal wrinkles between the striae. Forewing upper vein with complete row of setae, lower vein with only 2 distal setae.

Median pair setae on abdominal tergites II–VII situated on antecostal ridges; posterior margin of II–VI without comb medially; tergites VII and VIII with long and complete comb. Sternites II–VI with paired specialized sclerites laterally, anterior portion of sternite VII forming 2 protuberances, sternites without discal setae.

Male: Similar to female in color and shape. Abdominal sternites III–VII with large glandular areas; sternite VII normal without protuberances, no glandular area.

Distribution: Taiwan, Indonesia, India, Australia.

Habitat: *Imperata cylindrical*.

Remarks: The holotype of *Anaphothrips plynopygus* Karny from Indonesia (Sumatra) and specimens of *Zonothrips luridus* Anathakrishnan from India were examined in the Senckenberg Museum, Frankfurt, German by R. zur Strassen and L. A. Mound. The synonymy was indicated

on the World list of Thysanoptera (Mound, 2007) but has not previously been formally published. There are specimens of this species in the Australian National Insect Collection, Canberra, from Bali and from northern Australia. (Wang, 2007)

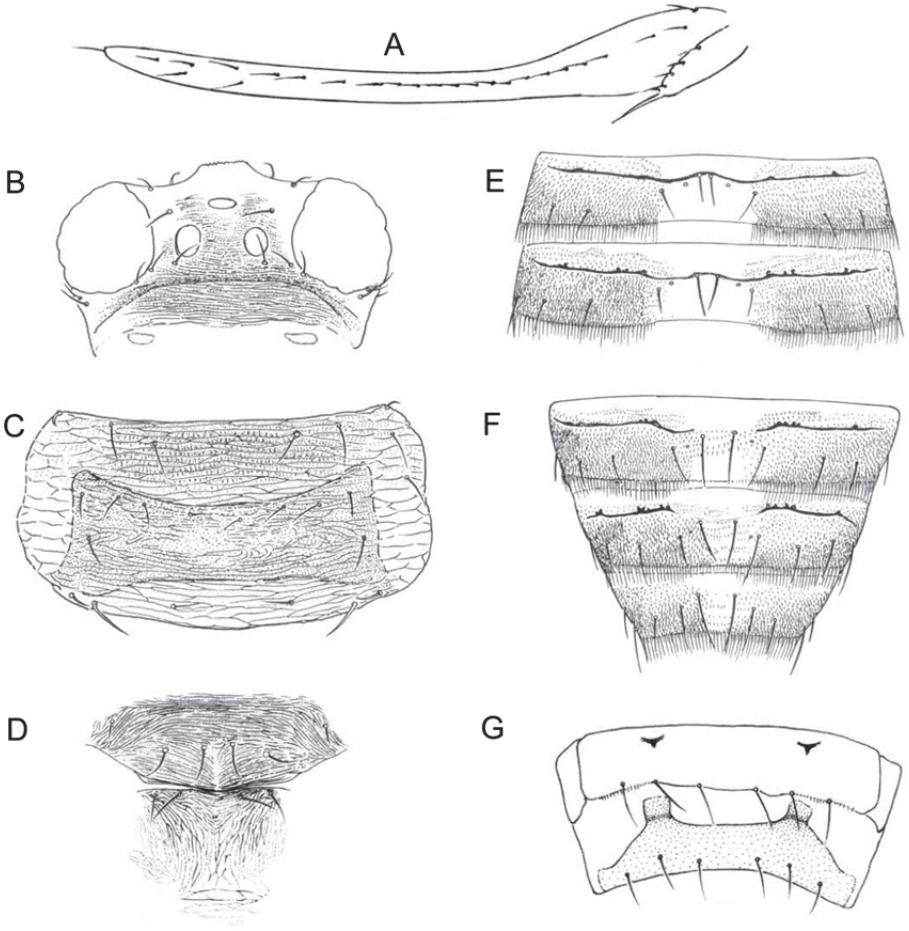

Fig. 38. *Hydatothrips plynopygus* (♀) A. forewing; B. head; C. pronotum; D. meso- and metanotum; E tergites III and IV; F. tergites VI-VIII; G. sternites VI and VII.

Neohydatothrips samayunkur Kudo (Fig. 39)

Neohydatothrips samayunkur Kudo, 1995; Appl. Entomol. Zool. 30(1): 169-176.

Female body length1.2 mm on slide. Head and thorax dark brown, laterals of abdominal tergites I-III brown, median yellowish brown; tergites IV-VI yellowish brown, tergites VII-X dark brown; antecostal ridges dark brown. Antennal segments I and II yellowish brown, III grayish yellow, IV grayish yellow but distal end grayish brown, basal 2/3 of V grayish yellow and distal end grayish brown, VI-VIII brown; legs brown, both ends of femora and tibiae yellow, all tarsi yellow; forewings brown with subbasal, median, and apical transparent areas.

Head short, with weak striae, anterior margin of occiput with a distance behind compound eyes, weak transverse striae on anterior portion. Interocellar setae situated previous of posterior ocelli. Mouth cone reach anterior margin of mesosternum; maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone, VI and VII with linear sensory area, II-VI with microtrichia.

Pronotal blotch covered with dense transverse striae, very weak dots between striae, 4 pairs of anterior marginal setae, one pair of lateral setae, one pair of posterior angular setae, one pair of posterior marginal setae. Mesonotum and metanotum with dense transverse striae. Forewing upper vein setae complete, lower vein no setae.

Laterals of abdominal tergites I-VIII with dense microtrichia; microtrichia on larerals of tergites II-III stronger, without longitudinal wrinkles; tergites II-VI without median posterior comb; posterior marginal comb on tergite VII and VIII complete. Median pair setae on tergites I-IV close to each other and on V-VIII further apart; sublateral of antecostal ridge on tergite II-VII with forwardly protruded spots, more significant on tergite VII; anterior portion of sternite VII protruding forward; without discal setae.

Distribution: Taiwan, Japan, US, Hawaii, Australia, Brazil.

Habitat: Marigold.

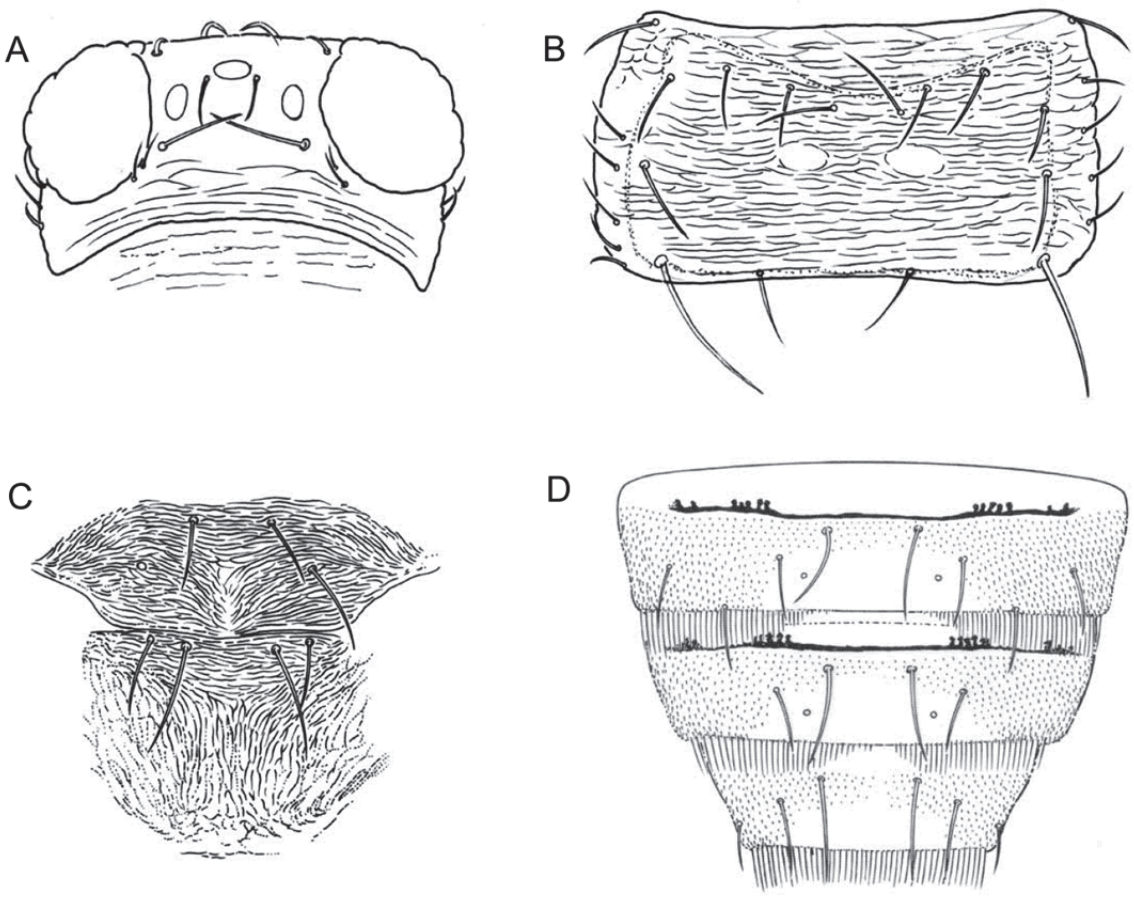

Fig. 39. *Hydatothrips samayunkur* (♀) A. heae; B. pronotum; C. meso- and metanotum; D. tergites VI-VIII.

Neohydatothrips surrufus Wang (Fig. 40)

Neohydatothrips surrufus Wang, 2007: 65-66.

Female length 1.2 mm on slide. Body with red pigment; dorsum of head, pronotal blotch, mesonotum and metanotum, abdominal tergites I-V grayish brown, tergite VI whitish; tergites VII-X brown; antecostal ridges of tergites I-VIII dark; antennal segments I-III grayish white, IV-VII brown except base of IV grayish; tibiae and tarsi yellow, fore femora grayish brown, mid and hind femora brown; forewing brown with a subbasal pale band.

Head short, anterior half with transverse striae, occipital apodeme touching posterior margin of compound eyes; weak wrinkles between striae on head and occiput; interocellar setae situated in front of posterior ocelli; mouth cone reach anterior margin of mesosternum; maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone, V and VI with linear sense area.

Pronotum outside of blotch with reticulations and inner wrinkles; blotch with dense transverse striae, 4 anterior marginal setae, one pair of lateral setae, one pair of long posteroangular setae, one pair of posterior marginal setae. Mesonotum and metanotum with dense transverse and weak wrinkles. Forewing upper vein about 20 setae, even and complete, lower vein with 2 distal setae.

Abdominal tergite I with rows of microtrichia laterally; tergites II-VIII with dense rows of microtrichia on areas lateral to submedian setae, longitudinal wrinkles between microtrichia on tergites II-V; tergites II-VII with median posterior comb, especially minute on II-VI; posterior comb on tergite VIII long and complete. Sublateral to antecostal ridges on tergite II-VII with forwardly protruded callosities; median pair of setae situated on antecostal ridge of tergite II-VII. Sternites III-VI with specialized sclerites, anterior portion of sternite VII forming 2 protuberances; sternites without discal setae.

Male unknown.

Distribution: Taiwan.

Habitat: *Imperata cylindrical*.

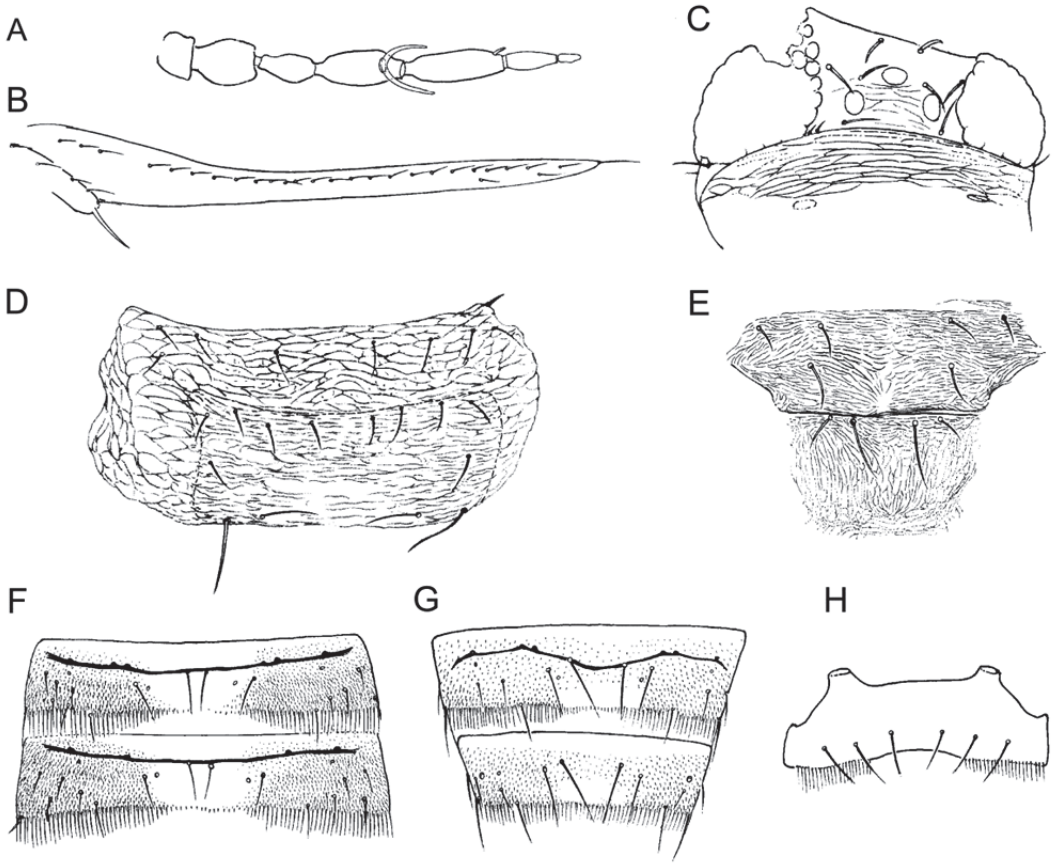

Fig. 40. *Neohydatothrips surrufus* Wang (♀) A. antenna; B. forewing; C. head; D. pronotum; E. meso- and metanotum; F. tergites III and IV; G. tergites VII and VIII; H. sternite VII.

Neohydatothrips tabulifer (Priesner) (Fig. 41)

Sericothrips tabulifer Priesner, 1935: 351-353.

Female body length 1.1-1.3 mm on slide. Head and thorax yellowish brown, oval or semielliptical areas on laterals of abdominal tergites II, III, VI and tergites VII-IX brown, the rest of tergites II, III, VI grayish brown, tergites IV and V whitish yellow; antecostal ridges dark brown. Antennal segments I-V grayish white except distl ends of IV and V grayish brown, VI and VIII grayish brown; legs yellow, mid and hind Femora brown except both ends yellowish; forewing brown with subbasal transparent area.

Head short, with transverse striae, anterior margin of occiput touch posterior margin of compound eyes; weak wrinkles between striae of head and occiput. Interocellar setae situated in front of posterior ocelli, outside of triangular area. Mouth cone reach anterior margin of mesosternum; maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone, V and VI with linear sensory area, II-VI with microtrichia.

Pronotal blotch covered with transverse striae and weak wrinkles, reticulations larger and with wrinkles on the rest of pronotum, anterior margin of blotch with a longitudinal apodeme, about 1/4 of the length of blotch, 2-3 anterior marginal setae on each side, 1-2 lateral setae, one pair of posterior angular setae, one pair of posterior marginal setae. Mesonotum and metanotum with dense transverse striae and weak wrinkles. Forewing upper vein setae complete, lower vein without setae.

Laterals of abdominal tergites I-VIII with dense microtrichia; posterior comb on tergites II-VI longer on laterals, short in middle; comb on tergite VII complete but shorter in middle; comb on tergite VIII even and complete. Median pair setae on tergites I-IV close to each other and on V-VIII further apart.

Male color and shape similar to female but brown area in abdominal tergites not forming clear oval areas; abdominal sternites IV- VII with glandular area.

Distribution: Taiwan, Japan.

Habitat: *Gloochidion lanceolatum*, *Eucalyptus robusta*, *Morus* sp.

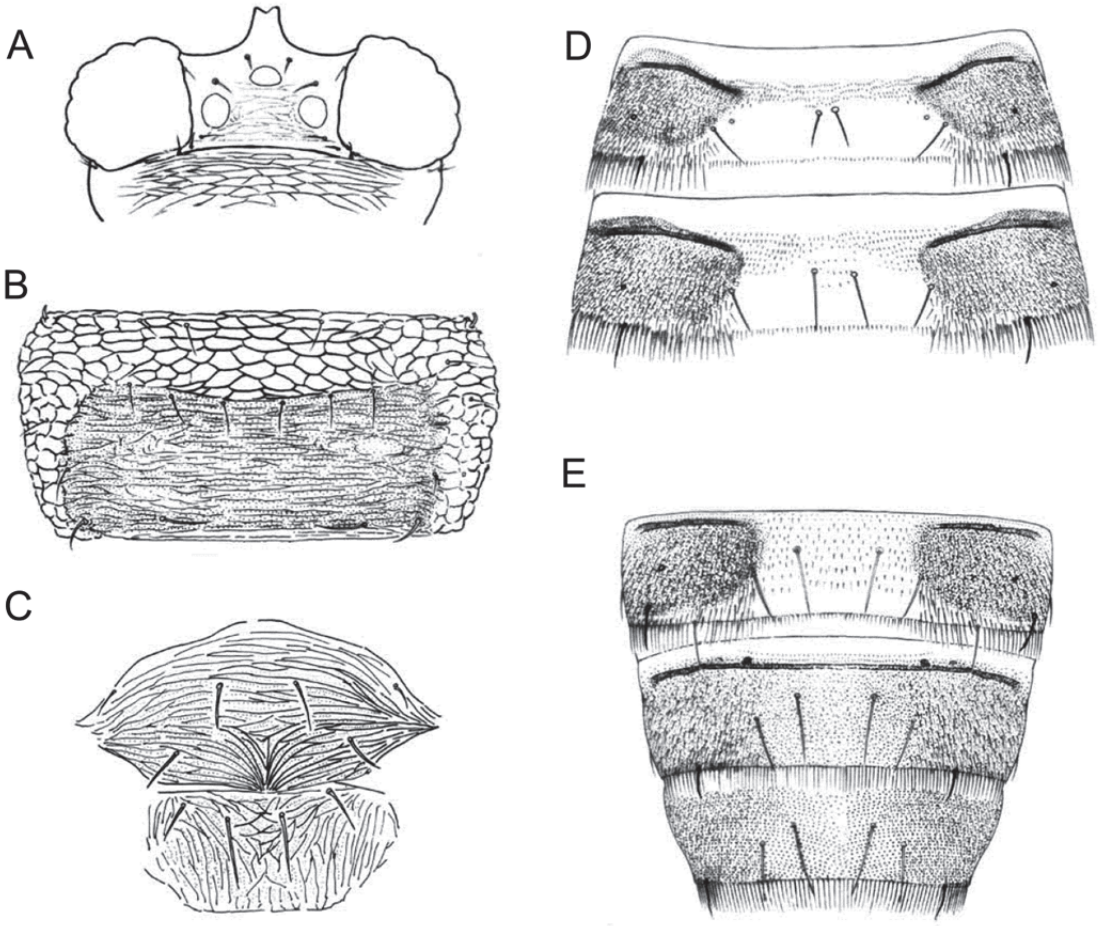

Fig. 41. *Hydatothrips tabulifer* (♀) A. antenna; B. pronotum; C. meso- and metanotum; D. tergites II and III; E. tergites VI-VIII.

*Tribe Thripini

Anterior and posterior margin of pronotum about equal length. Metafurca normal. Median pair setae on abdominal tergites I-IV lacking, or if exist, distance between setae longer than seta length.

Genus *Anaphothrips* Uzel

Anaphothrips Uzel, 1895: 142. Type species: *Thrips obscura* Muller, 1776.

Macroptera or microptera. Antennae 8 or 9-segmented, segments III and IV with forked sense cone; anteocellar setae 2 pairs. Pronotum without long setae; mesofurca with spinula, metafurca without spinula; setae on longitudinal veins of forewings short and arranged unevenly. Posterior comb on abdominal VIII complete; tergite X split completely. About 80 species in the world.

Anaphothrips (*Neophysopus*) *sudanensis* Trybom (Fig. 42)

Anaphothrips (*Neophysopus*) *sudanensis* Trybom, 1911: 1.
Euthrips sudanensis (Trybom): Karny, 1912: 333.
Anaphothrips bicinctus Hood, 1925: 50.
Anaphothrips bicolor Morgan, 1925a: 4.
Anaphothrips alternans (Bagnall): Bagnall, 1926c: 642.
Anaphothrips piercei Moulton, 1936a: 265.

Female (macropterous) body length 1-1.4 mm on slides. Head and thorax brown, abdominal segments I, II and VI-X brown, segments III-V grayish yellow; antennal segment III yellow,

* See footnote on p. 75.

segment IV yellow or grayish brown, the rest segments brown; basal 1/4 of forewing almost transparent, followed by a grayish brown band, the distal half grayish yellow; legs yellow, femora light brown.

Head wider than long, length about the same as pronotum; 6 ocular setae arranged in a transverse row behind compound eyes; transverse lines behind compound eyes, cheeks near parallel; interocellar setae short, located in front of posterior ocelli. Mouth cone broad and rounded, reach middle of prosternum; maxillary palpi 3-segmented. Antennae 8-segmented, segments III and VI with forked sense cone, simple sense cone on inner side of VI quite long, reach middle of VII.

Prothorax a little broader than head, pronotum without clear transverse striae, with short setae; spinula present on mesofurca, absent on metafurca. Forewing with slightly forwarded apical ends, upper vein with 9-11 setae, lower vein with 8-10 setae, posterior fringe wavy. Hind tibia with inner row of 4-5 spines.

Abdominal tergites VI and VII with saw-like teeth on lateral of posterior margin; posterior comb on tergite VIII complete; split on tergite X complete. Posterior margin of sternites II-VII each with 3 pairs of setae, without discal setae.

Female (brachypterous): Forewings retarded, transparent, length only reach posterior of metathorax, without hindwings. Other characteristics similar to macropterous female but with more variable body color: head brown, prothorax brown, pterothorax brown or yellow or orange yellow; or prothorax, pterothorax all orange yellow. Abdominal segments I and II brown, segment VI whole or only posterior half brown, segments VII-X brown.

Male: All males are microptera. Body color and size quite different from female, **o**nly a short wing scale left as forewing (Kudo, 1989). Body length 0.6-0.9 mm on slides, body light yellow,

antennal segments I and II light yellow, III yellow, IV and V yellow with distal ends brown, VI-VIII brown; abdominal sternites III-VII with glandular areas.

Distribution: Taiwan, Indonesia, India, Sri Lanca, Isreal, Egypt, Sudan, Somalia, SouthAfrica, United Kingdom, Morocco, Porto Rico, Cuba, Cyprus, Australia.

Habitat: Indian jajaba (*Zizyphus jujuba*), sugara cane (*Saccharum* sp.), *Ipomoea nil*, *Alpinia formosana*, and weeds as *Digitaria adscendens*, *Euphorbia hirta*, *Digitaria violascens*, *Brachiaria mutica*.

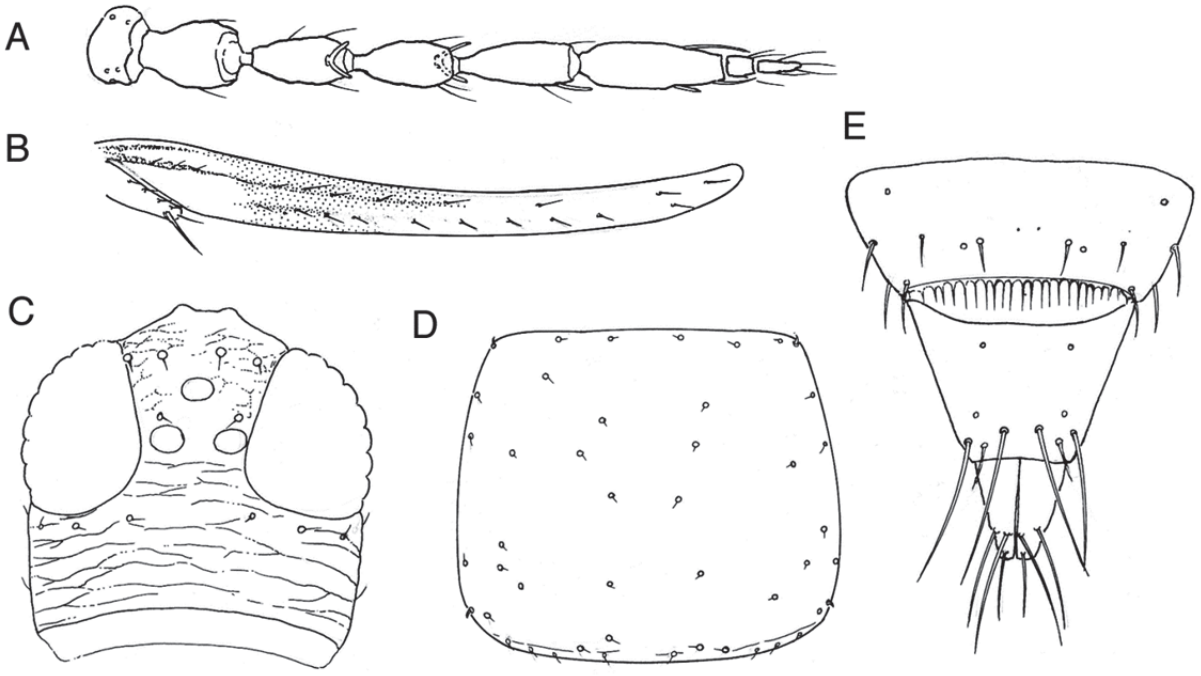

Fig. 42. *Anaphothrips* (*Neophysopus*) *sudanensis* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. tergites VIII-X.

Genus *Anascirtothrips* Bhatti

Bhatti, 1961: 26. Type species: *Anascirtothrips arorai* Bhatti, 1961.

Head broad, anteocellar setae 2 pairs, 3 ocular setae behind each posterior ocelli; antennae 7-segmented, segments III and IV with forked sense cone. Pronotum broad, with dense transverse striae, without major setae; vein setae of forewings unevenly arranged, posterior fringe wavy. Abdominal tergites and laterals of sternites with several rows of microtrichia, some species with dark antecostal ridge or with dark markings medially; posterior comb of tergite VIII complete. Male without abdominal glandular area, tergite IX without drepanae. There are 4 species in the world.

Anascirtothrips discordiae Chen & Lu, 1994 (Fig. 43)

Anascirtothrips discordiae Chen & Lu, 1994: 89-91.

Female body length 1 mm on slides. Head and thorax yellow, abdomen grayish yellow, tergites IV-VIII with dark antecostal ridge, about 1/2 width of the segment, median without dark marking, laterals of tergites II-VIII with light brown areas; antennal segment I grayish yellow, segments II-VII brown; forewings grayish brown.

Head wider than long, dorsal surface with fine transverse striae, 2 pairs of anteocellar setae, interocellar setae situated as high as posterior margin of fore ocellus, outside of ocellar triangular area.

Pronotum broad, transverse striae weak, 5 pairs of posteromarginal setae about equal length, 5 pairs of anteromarginal setae, over 20 discal setae; median pair setae of metanotum located posteriorly to anterior margin. Forewing scale with 3 anteromarginal setae, upper vein setae 3+(4-6) at base, one median setae, 2 diatal setae, lower vein with 3 setae, posterior fringe wavy.

Lateral 1/3 of abdominal tergites II-VIII with dense microtrichia, each with 3 setae; median pair setae on tergites II-VII longer posteriorly, setae on the same tergite closely situated, distance between setae shorter than length of the setae. Laterals, posterior laterals and posterior margins of sternites with mecrotrichia; sternites II-VII with 3 pairs of discal setae.

Male similar to female, sternite IX without drepanae.

Distribution: Taiwan.

Habitat: *Ficus microcarpa*, *Ficus septica*, *Ampelopsis brevipedunculata*.

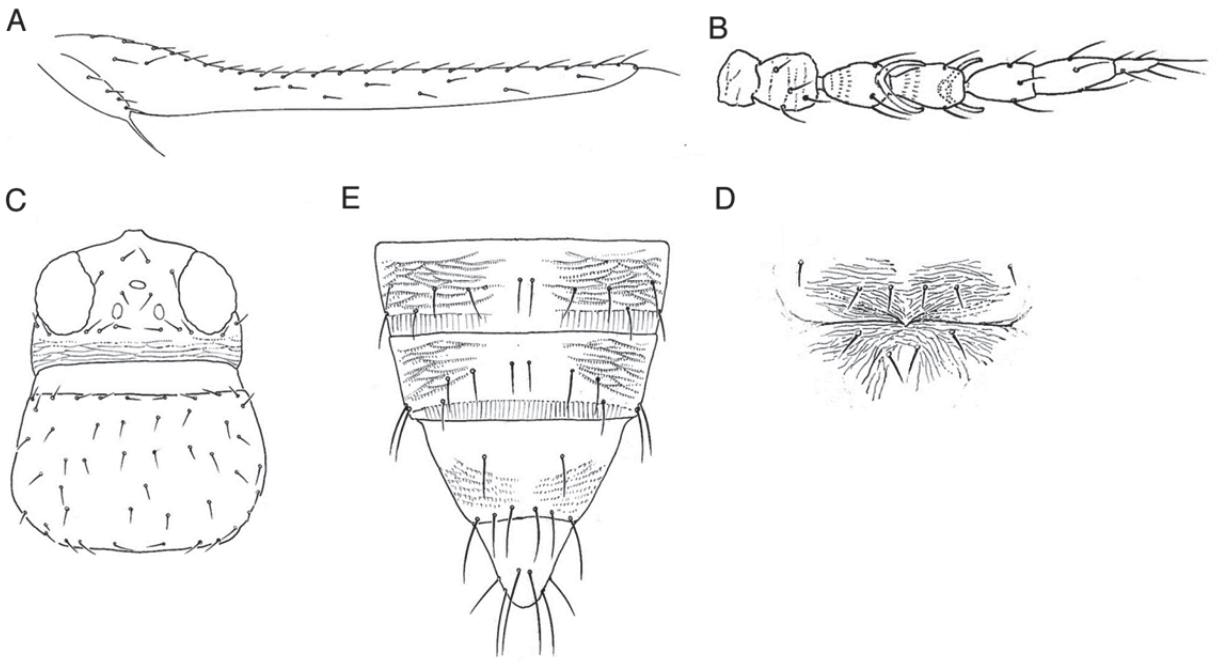

Fig. 43. *Anascirtothrips discordiae* (♀) A. forewing; B. antenna; C. head and pronotum; D. meso- and metanotum; E. tergites VII-X.

Genus *Ayyaria* Karny

Ayyaria Karny, 1926: 193. Type species: *Ayyaria chaetophora* Karny, 1926.

Antennae 8-segmented; anteolaterals of pronotum each with a long seta, posterolaterals each with 2 long setae, no discal setae; vein setae of forewings strong; abdominal tergites with reticulations, posterior comb on tergite VIII complete. Only one species in the world.

Ayyaria chaetophora Karny (Fig. 44)

Ayyaria chaetophora Karny, 1926: 193.
Parafrankliniella fasciatus Kurosawa, 1937: 271.

Female body length 1.4 mm on slides. Color dark, antennal segments I and II dark brown, III-V yellowish except distal 1/3 of each segment grayish brown, basal 1/3 of VI yellow and distal end grayish brown, VII and VIII grayish brown; forewing transparent with 2 brown bands; femora dark brown, fore tibia yellowish brown and distal 1/3 paler, mid and hind tibiae light yellow, all tarsi light yellow.

Cheeks parallel, anteocellar setae 2 pairs, interocellar setae long, situated between centers of anterior and posterior ocelli; maxillary palpi 2-segmented; antennae slender, 8-segmented, forked sense cone on segments III and IV slender.

Pronotum without striae, one pair of anterolateral setae, 2 pairs of posterolateral setae, lateral marginal setae and posterior median marginal setae about equal length; mesofurca and metafurca both with spinula. Upper vein of forewing with 3 vein setae in basal brown area, 3 distal setae; lower vein with 3 setae, the first seta situated in middle of the wing. Legs narrow, femora and tibiae with transverse striae, tarsi slender, 2-segmented; inner side of hind tibia with 7 spines.

Abdominal tergites I-VII with polygonal reticles; anterior and lateral of tergite VIII with reticulations, posterior comb complete; tergite IX with 5 pairs of long setae; tergite X not split. Sternites with discal setae.

Male body shape and color similar to female, but smaller, about 1 mm in length. Abdominal segment IX about twice the length of segment VII, with one pair of thorn-like setae in middle, situated on a protuberant base. Not recorded in Taiwan.

Distribution: Taiwan, mainland China, India, Japan, South Pacific islands**.**

Habitat: Leguminosae.

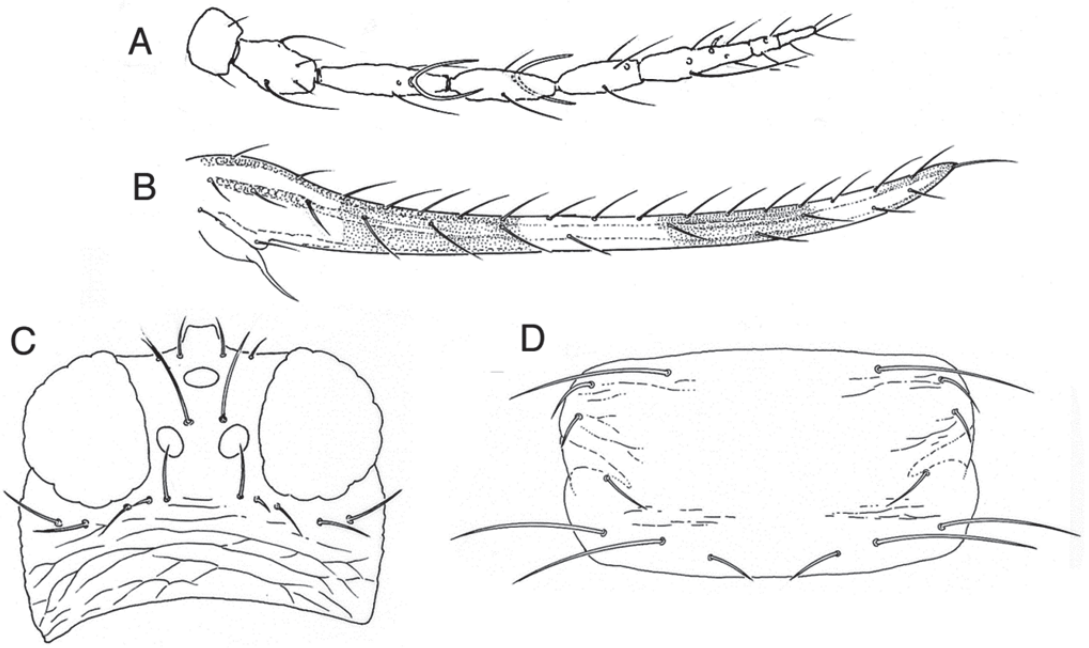

Fig. 44. *Ayyaria chaetophora* (♀) A. antenna; B. forewing; C. head; D. pronotum.

Genus *Bathrips* Bhatti

Bathrips Bhatti, 1962a: 34. Type species: *Taeniothrips melanicornis* Shumsher Singh, 1946.

Antennae 8-segmented, segments III and IV with forked sense cone. Pronotum with 2 pairs of posterolateral setae. Forewing with 4-5 setae on lower vein, 3 setae on scale. Only the following two species in the world.

Bathrips jasminae Ananthakrishnan (Fig. 45)

Bathrips jasminae Ananthakrishnan, 1968: 260.

Female body length 1.3-1.4 mm on slides. In dark color, abdomen lighter, tergites II-VIII with dark antecostal ridge; antennal segments dark brown; wings brownish; legs light yellow.

Head wider than long, cheeks smooth, occiput with several rows of reticulations. One anteocellar seta on each side of anterior ocellus, one pair of interocellar setae between posterior ocelli, one pair of ocullar setae just behind posterior ocelli. Maxillary palpi 3-segmented. Antenna 8-segmented, segments III and IV each with a forked sense cone.

Pronotum with 2 long setae each on posterolateral angular, median of posterior margin with 2 pairs of setae, inner pair longer. Forewing with 18-19 costal setae, upper vein with 5 basal setae and 3 distal setae, lower vein with 4-5 setae.

Abdominal tergites I and II and laterals of tergites III-VIII with transverse striae; tergites VIII without posterior comb; tergite X not split. Sternites III-VII with 3 pairs of posterior marginal setae, no discal setae.

Male unknown**.**

Distribution: Taiwan, India.

Habitat: *Osmanthus* sp., tea (*Camelia sinensis*), *Jasmine* sp.

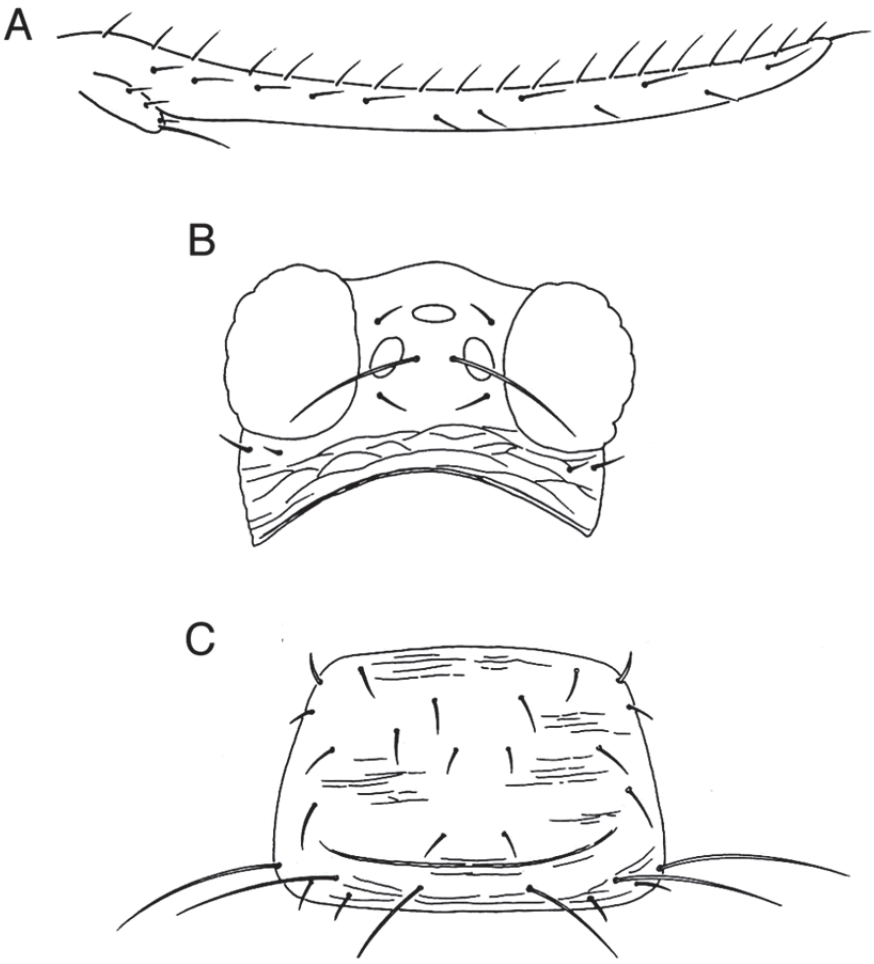

Fig. 45. *Bathrips jasminae* (♀) A. forewing; B. head; C. pronotum.

Bathrips melanicornis (Shumsher Singh) (Fig. 46)

Taeniothrips melanicornis Shumsher Singh, 1946: 166, 179.
Bathrips melanicornis (Shumsher Singh): Bhatti, 1962a: 34.

Female body length 1.3-1.4 mm on slides. Body with pale yellow and brown color: head pale yellow, occiput light brown, red pigment in compound eyes conspicuous; prothorax pale yellow, pronotum with 2 longitudinal brownish bands; pterothorax pale yellow mixed with light brownish color; abdomen pale yellow, middle of tergites pale brown, form a T shape on tergites III-VIII; antennae dark brown, darker than any other parts of the body, paler only at distal end of segment III wings brownish; legs pale yellow.

Head broad, cheeks smooth, compound eyes about equal length to cheeks, occiput with several rows of reticulations. One anteocellar setae on each side of anterior ocellus, one pair of interocellar setae between posterior ocelli, one pair of ocullar setae just behind posterior ocelli. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone.

Pronotum with 2 long setae each on posteroangular, median of posterior margin with 2 pairs of setae, inner pair longer. Forewing with 21-24 costal setae, upper vein with 5 basal setae and 3 distal setae, lower vein with 4-5 setae.

Abdominal tergites I and II and laterals of tergites III-VIII with transverse striae; tergites VIII without posterior comb; tergite X not split. Sternites II-VII with 3 pairs of posterior marginal setae, no discal setae.

Male shape and color similar to female, but smaller. Antennal segment I light brown, II pale yellow, III-VIII dark brown. Median of abdominal tergite IX with one pair of dark and thick thorn-like setae; sternite VII with an elliptical glandular area**.**

Distribution: Taiwan, Burma, India**.**

Habitat: seriously occurred on *Jasminum* sp., also found on *Lantana camara.*

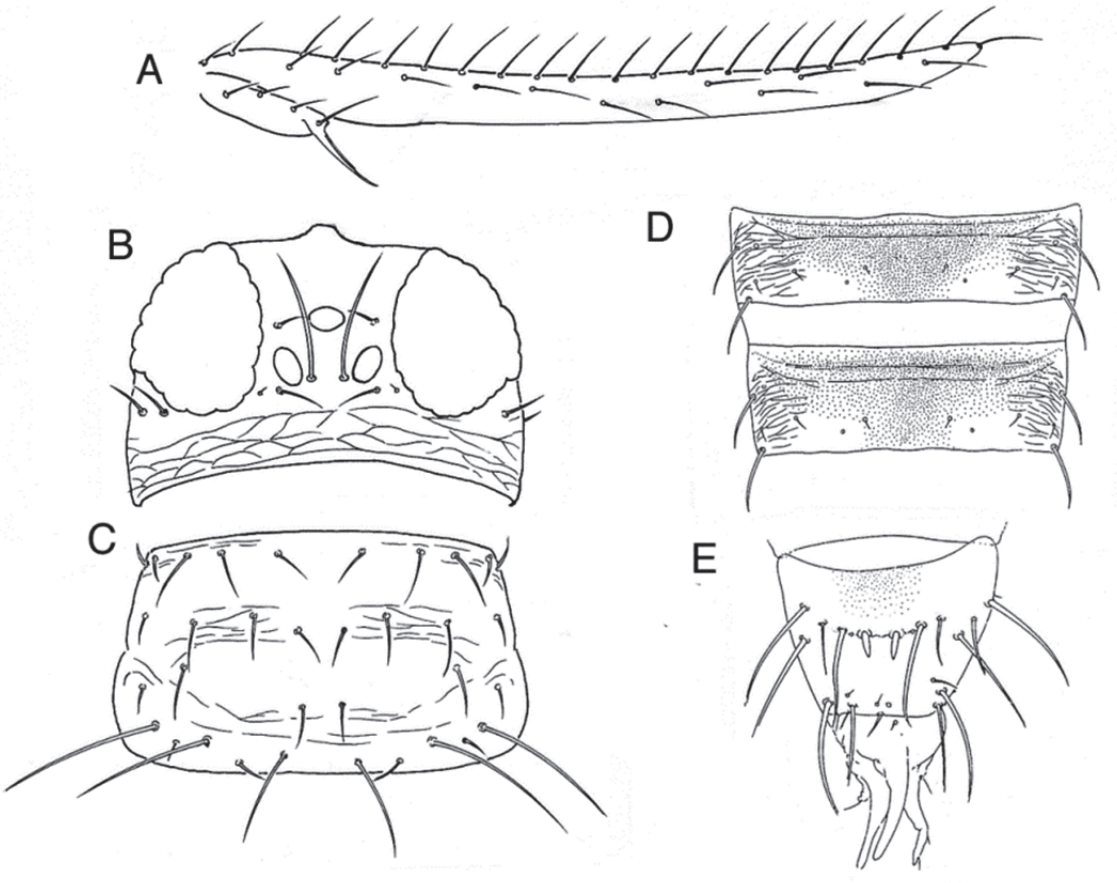

Fig. 46. *Bathrips melanicornis* (♀) A. forewing; B. head; C. pronotum; D. tergites IV and V; (♂)E. abdomen terminal.

Genus *Bolacothrips* Uzel

Bolacothrips Uzel, 1895: 30, 39, 45, 57, 211.

Boalcidothrips Priesner, 1930: 6. Type species: *Bolacothrips jordani* Uzel, 1895.

Body slender, head slightly longer, antennae slender, 7-segmented, segments III and IV with simple sense cone, posterolateral angles of pronotum each with 2 long setae, anterior margin with one pair of long setae. Forewings broad, with stout vein setae. Abdominal tergite VIII without posterior comb; tergite X split except at the base. Twelve species in the world.

Bolacothrips graminis (Priesner) (Fig. 47)

Bolacidothrips graminis Priesner, 1930: 6.
Bolacothrips graminis (Priesner): Bhatti, 1983: 492.

Female body length about 1.6 mm on slides. Pale yellow; abdominal tergites II-VII with brown antecostal ridges, tergites IX and X brown; distal end of antennal segment V, and segments VI and VII grayish brown; wings pale yellow, with 2 light brown bands, the basal band broader.

Head wider than long, vertex protruded, cheeks about twice the length of compound eyes. One long setae on each side of anterior ocellus, one pair of short setae on vertex, 2 pairs of ocellar setae longitudinally arranged behind posterior ocelli, one long seta behind each eye, one short seta in front of and another short seta behind this seta, maxillary palpi 2-segmented. Antennae 7-segmented, segments III and IV with simple sense cone.

Pronotum with a pair of long setae at anterior margin, 2 long setae at each of posteroangular, the inner pair longer. Upper vein of forewing with 15-17 setae, lower vein with 11-14setae. Fore femora slightly enlarged.

Abdomen slender, tergites I-VIII with short spine-like comb on laterals of posteromargin; tergite VIII with posterolateral microtrichia, comb lacking in middle; tergite X partly split. Sternites with marginal setae and discal setae, discal setae on sternites III-VII arranged in 2 rows.

Male body smaller and paler than female, base of antennal segments V and VI pale yellow.

Distribution: Taiwan, Egypt**.**

Habitat: *Sorghum vulgare, Polypogon monspeliensis*, *Cynodon dactylon, Panicum colonum, Imperata cylinduica, Zea mays, Phragmites communis, Saccharum* sp., *Scirpus* sp.

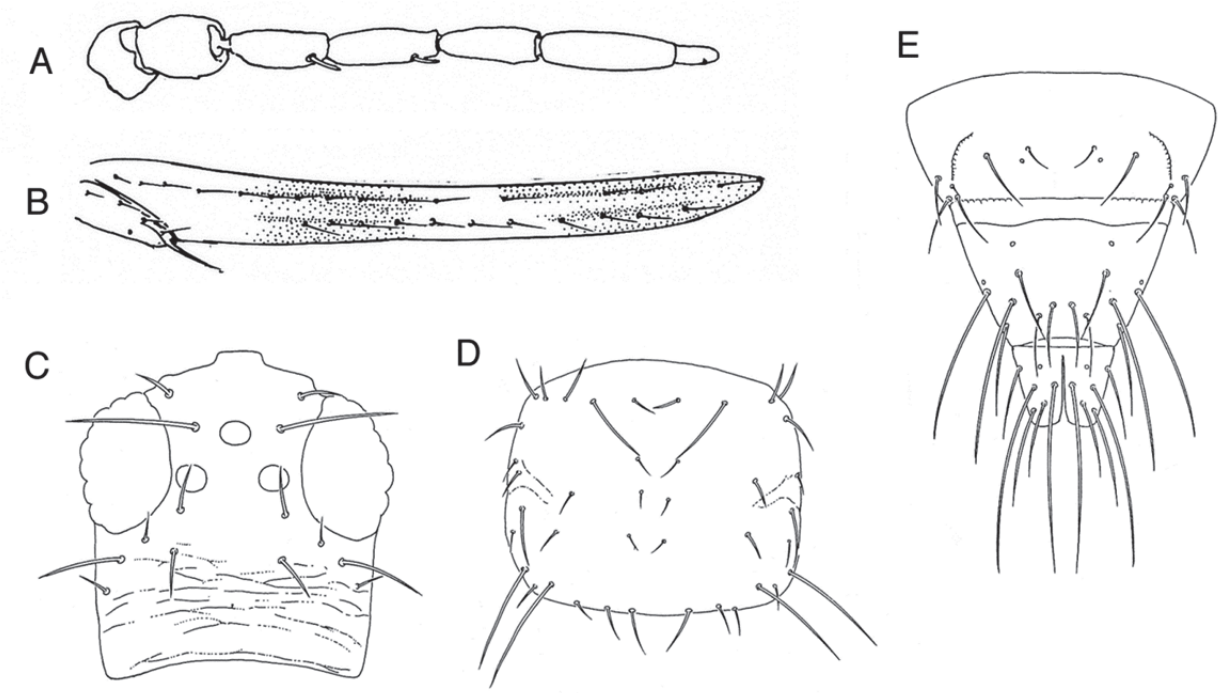

Fig. 47. *Bolacothrips graminis* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. tergites VIII-X.

Bolacothrips striatopennatus (Schumtz)

Thrips striatopennatus Schumtz, 1913: 1001,1002.

Bolacothrips orientalis Priesner, 1935b: 359.

Bolacothrips striatopennatus (Schumtz): Bhatti, 1983: 492.

Female yellow species with macropterous or brachypterous female and brachypterous male. Female with gray shadings on pronotum, mesonotum and metanotum, mesopleura, and abdominal segment II; apex of abdomen not shaded gray; antennal segment V shaded mostly, VI-VII dark; forewing with 2 gray brown cross bands alternating with 3 clear areas.

Head a little longer than wide, antennae 7-segmented, interocellar setae long, situated on sides of front ocellus.

Pronotum with 2 long setae at each of posteroangular, the inner pair longer. Upper vein of forewing with 11-14 setae, unevenly arranged.

Abdominal tergites I-VIII with striae either on laterals (macropterous) or all over the tergites (Brachypterous). Posterior comb on tergite VIII short and lacking in middle. Sternites with discal setae.

Male yellow, all setae light color; antennal segments I-IV grayish yellow, V gray at base, VI and VII dark.

Distribution: Taiwan, India, Sri Lanca, Indonesia, Malaysia, Guam.

Habitat: Onion, green onion (*Allium fistulosum*), grasses.

Remarks: No specimen examined, description of female followed Bhatti (1983), description of male followed Priesner (1935b) for male of *B. orientalis*.

Genus *Chaetanaphothrips* Priesner

Anaphothrips subgenus *Chaetanaphothrips* Priesner, 1925: 145.

Type species: *Euthrips orchidii* Moulton, 1907.

Most species are in light color. Head wider than long. Antennae 8-segmented, segments III and IV with forked sense cone (rare with simple sense cone). Pronotum with 5 pairs of posteromarginal setae; mesofurca with spinula, metafurca without spinula. Forewing with 6 basal setae and 2-3 distal setae on upper vein, lower vein with 4 setae, posterior fringe wavy; tarsi 2-segmented. Abdominal tergites and sternites with posterior flanges; laterals of tergites VIII with stippled areas near spiracles; longitudinal split of tergite X complete. About 20 species in the world.

Key to species of *Chaetanaphothrips* in Taiwan

1. Base and middle of forewing with brown areas 2
-- Forewing transparent at base, middle with small brown area or transparent ..... *leeuweni*

2. Female stippled area around spiracles of abdominal tergite VIII not reach anterior margin of this tergite, in irregular shape .....*machili*
-- Female stippled area around spiracles of abdominal tergite VIII reach anterior margin of this tergite 3

3. All 5 pairs of pronotal posteromarginal setae small and short .....*theiperdus*
-- At least one pair of long pronotal posteromarginal setae 4

4. From outside, 1st and 3rd pairs of pronotal posteromarginal setae long, other pairs short..... ..... *orchidii*
-- From outside, 1st pair of pronotal posteromarginal setae long, all other pairs short .. *querci*

Chaetanaphothrips leeuweni (Karny) (Figs. 48B, 49A, 50A)

Euthrips leeuweni Karny, 1914: 358-359.
Scirtothrips clarus Moulton, 1942: 8.
Chaetanaphothrips clarus (Moulton): Mitri & Stannard, 1962: 383-336.

Female body length 1-1.1 mm. Body and legs light yellow, ovipositor yellowish brown, antennae light yellow, distal of IV, distal 1/3 of V and distal half of VI brown, VII and VIII light brown. Base of forewing light brown, with a light brown spot in middle, less than 1/10 the length of the wing, this middle brownish spot may very light and make forewing almost transparent except the base.

Head wider than long, cheeks about same length as eye. Ocellar setae short, interocellar setae situated in ocellar triangular area; mouth cone rounded and short, maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked. sense cone, sense cone on inner side of V obviously longer than that on outer side.

Pronotal setae short, 5 pairs of posteromarginal setae, the outermost pair longest. Forewing with 16-23 costal setae, upper vein with 6 basal setae, 3 distal setae, lower vein 4 unevenly arranged setae.

Laterals of tergites II-VIII with transverse striae; stippled area around spiracle on each side of tergite VIII reach anterior margin of this tergite, posterior comb on tergite VIII only on laterals; split on tergite X complete. Sternite II with 2 pairs of discal setae, sternites III-VII without discal setae.

Male unknown.

Distribution: Taiwan, India, Indonesia, Japan.

Habitat: Found with *Eugynothrips persimilis* (Karny) in gall of *Conocephalus suaveolens* BI. Common on grasses and wooden plants in southern Taiwan.

Chaetanaphothrips machili Hood (Figs. 48C, 49B, 50B)

Chaetanaphothrips machili Hood, 1954a: 215.
Anaphothrips (*Chaetanaphothrips*) *orchidi* (*Moulton*): Moulton, 1928a: 291,324.

Female body length 0.9-1.1 mm on slides. Body and legs yellow to yellowish brown, abdomen paler than head and thorax; antennae light yellow, distal halves of segments V and VI and whole segments VII and VIII grayish brown; forewing basal grayish brown area about same length as subbasal transparent area, median brown area about 1/2 length of the wing, longer than the apical transparent area.

Head broad, cheeks about same length as compound eyes. All ocellar setae short, one pair of interocellar setae situated in front of posterior ocelli, 2 pairs of anteocellar setae. Mouth cone short and rounded, maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone, sense cone on inner side of segment V obviously longer than the outer one.

Pronotal setae short, 5 pairs of posteromarginal setae. Forewing with 19 costal setae, upper vein with 6 basal setae, 3 distal setae; lower vein with 4 unevenly arranged setae.

Abdominal tergites II-VIII with transverse striae on laterals; tergite VIII with stippled area around each spiracle, this specialized areas are in irregular shape and not reach the anterior margin of tergite; comb on posterolaterals of tergite VIII lacking in the middle; tergite X with a complete split. Sternites II-VII without discal setae.

Male body shape and color similar to female, about 0.9 mm in length. Median length of tergite IX about 1.4 times of pronotum, one pair of stout and black setae situated on a tubular base. Sternites IV- VII with transverse glandular areas.

Distribution: Taiwan, Malaysia, Japan.

Habitat: *Cinnamimum camphora*, *Machilus thunbergii*.

Remarks: This species damaged young leaves of camphor, causes edges of leaves curling downward. Takahashi (1928) collected this species in Taiwan and identified it as *C. orchidii,* Hood (1954a) re-identified it as C. *machili*, and published it as a new species. This species was found attacking ornamental plant (*Spathiphyllum kochii*) under greenhouses in Taiwan. Young leaves form yellow stripes and curling edges, or even wilt.

Chaetanaphothrips orchidii (Moulton) (Figs. 48A, 49C, 50C)

Banana rust thrips, Orchid thrips

Euthrips orchidii Moulton, 1907: 43, 52.
Physothrips orchidii (Moulton): Karny, 1912: 339.
Euthrips marginemtorquens Karny, 1914: 362.
Anaphothrips (*Chaetanaphothrips*) *orchidii* (*Moulton*): Priesner, 1925: 145.

Female body length 1-1.1 mm on slides. Body and legs yellow, ovipositor yellowish brown. Antennae yellow, distal end of segment IV, distal 1/3 of V, distal half of VI and VII and VIII grayish brown. Forewing basal grayish brown area about equal length as subbasal clear area, median grayish brown area about 1/2 of the wing, distal clear area about 1/2 the length of the median brown area.

Head wider than long, cheeks about same length as compound eyes. Ocellar setae short, one pair of anteocellar setae, one pair of interocellar setae inside ocellar triangular area. Mouth cone rounded and short, maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone, sense cone on inner side of V obviously longer than outer one.

Pronotal discal setae short, posterior margin with 5 pairs of setae, first and third pairs from laterals better developed, the third pair longest. Forewing with 16-23 costal setae, upper vein with 6 basal setae, 2-3 distal setae, lower vein with 4 unevenly arranged setae.

Abdominal tergites II-VIII with transverse striae on lateral; stippled area around spiracle on each side of tergite VIII reach anterior margin; posterior marginal comb on tergite VIII only on laterals; tergite X with complete split. Sternite II with 2 pairs of accessory setae, sternites III-VII without discal (accessay) setae.

Male unknown**.**

Distribution: Cosmopolitan.

Habitat: *Acacia confusa*, *Lantana camara*, (*Rhododendron* sp., *Mirabilis* sp.

Remarks: This species occurred on various plants, became pests when densities turned high. It has been found on banana in Australia and South America (Bhatti, 1978a; Hood, 1954a), grapefruit in southern US (Thompson, 1939), *Anthurium* in Hawaii (Hara & Hara, 1992), orchids and ornamental plants in greenhouses (Kurosawa, 1938). In Taiwan, this species has no record of damaging any crops, the pest thrips on banana are *Thrips hawaiiensis* (Morgan) (Chen et al, 1980), not this species.

Chaetanaphothrips querci Kudo (Figs. 48E, 49D, 50D)

Chaetanaphothrips querci Kudo, 1985: 324-326.
Chaetanaphothrips longsetis Nonata & Okajima, 1992: 440-442.

Female body length about 1 mm on slides. Body and legs yellow. Antennae yellow, distal end of segment IV, distal 1/4 of V, distal half of VI, and segments VII and VIII grayish brown. Forewing basal grayish brown area about equal length as subbasal clear area, median area grayish brown, distal clear area about the length of the median brown area.

Head wider than long, cheeks about same length as compound eyes. Ocellar setae short, one pair of anteocellar setae, one pair of interocellar setae inside ocellar triangular area. Mouth cone

rounded and short, maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone, sense cone on inner side of V obviously longer than outer one.

Pronotal discal setae short, posterior margin with 5 pairs of setae, first pair from lateral longest. Forewing with 22 costal setae, upper vein with 6 basal setae, 3 distal setae, lower vein with 4 unevenly arranged setae.

Abdominal tergites II-VIII with transverse striae on lateral; finger-shaped stippled area around spiracle on each side of tergite VIII reach anterior margin; posterior comb on tergite VIII only on laterals; tergite X split completely.

Male unknown.

Distribution: Taiwan, Japan.

Habitat: *Quercus glauca*, *Camelia sinensis*, *Podocarpus* sp., *Michelia* sp., *Agathis alba*.

Chaetanaphothrips theiperdus (Karny) (Figs. 48F, 49E, 50E)

Anaphothrips theiperdus Karny, 1921: 69.

Chaetanaphothrips theiperdus (Karny): Mitri & Stannard, 1962: 383, 386.

Chaetanaphothrips taiwanus Sakimura, 1974: 319.

Female body length about 1.1-1.2 mm on slides. Body and legs yellow. Antennae yellow, distal end of segment III, distal 3/4 of IV, distal half of V, distal 3/4 of VI, and VII and VIII grayish brown. Forewing grayish brown, with subbasal and apical areas in lighter color.

Head broad, cheeks about same length as compound eyes. Ocellar setae short, one pair of anteocellar setae, one pair of interocellar setae inside ocellar triangular area. Mouth cone rounded and short, maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone, sense cone on inner side of V obviously longer than outer one.

Pronotal discal setae short, posterior margin with 5 pairs of setae, all short. Forewing with 22 costal setae, upper vein with 6 basal setae, 3 distal setae, lower vein with 4 unevenly arranged setae.

Abdominal tergites II-VIII with transverse striae on lateral; stippled area around spiracle on each side of tergite VIII reach anterior margin, almost connected; posterior comb on tergite VIII only on laterals; tergite X split completely. Sternites II-VII without discal setae.

Male unknown.

Distribution: Taiwan, Spain.

Habitat: *Camellia sinensis*.

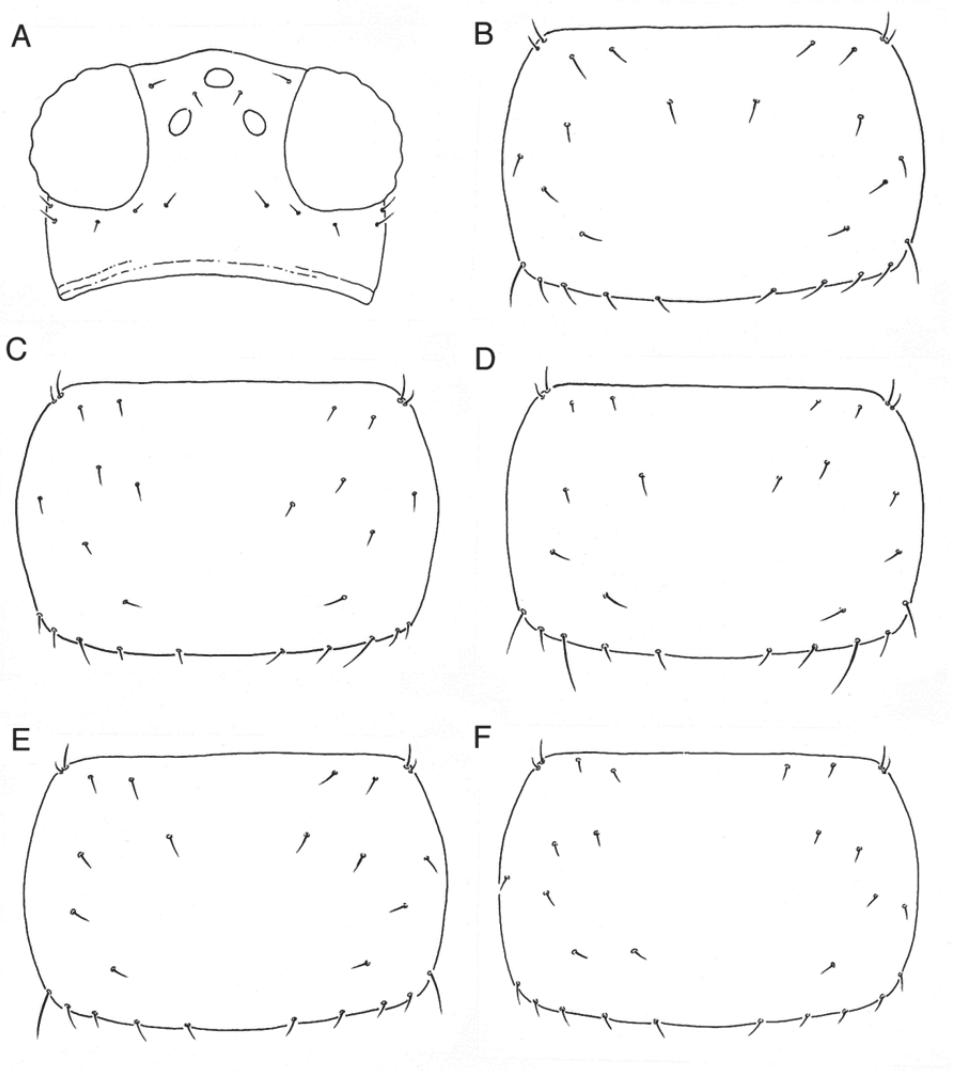

Fig. 48. *Chaetanaphothrips*: head (A) *orchidii*; pronotum (B-F): B. *leeuweni*; C. *machili*; D. *orchidii*; E. *querci*; F. *theiperdus*.

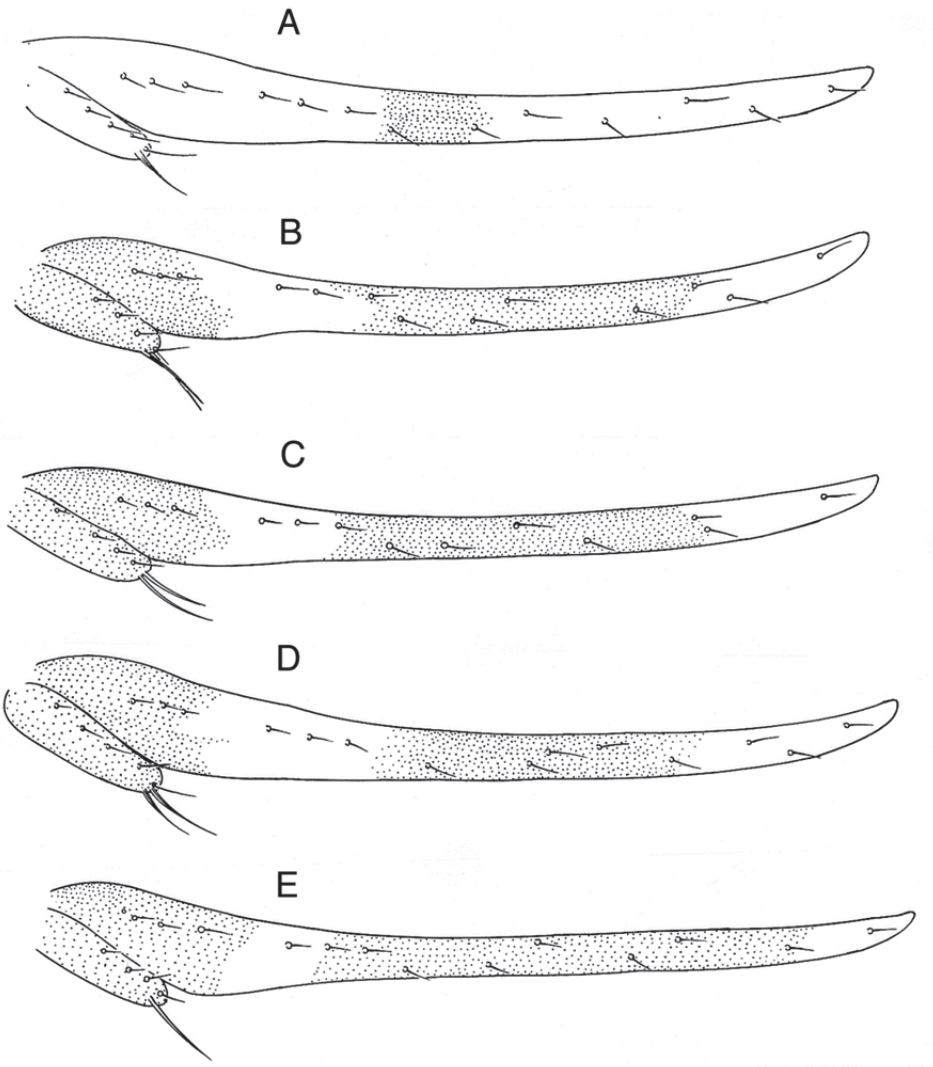

Fig. 49. Forewing of *Chaetanaphothrips*: A. *leeuweni*; B. *machili*; C. *orchidii*; D. *querci*; E. *theiperdus*.

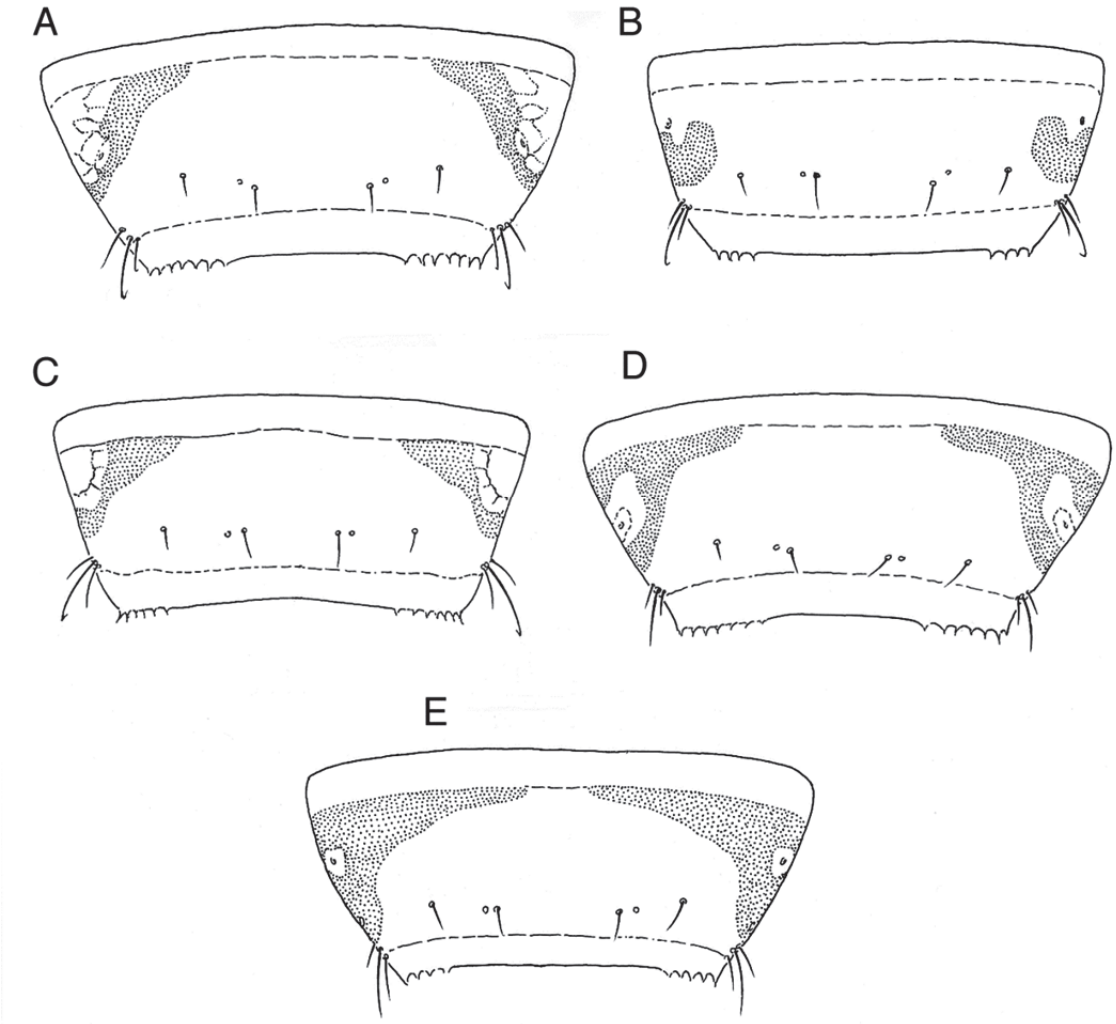

Fig. 50. Tergite VII of *Chaetanaphothrips* (♀): A. *leeuweni*; B. *machili*; C. *orchidii*; D. *querci*; E. *theiperdus*.

Genus *Chirothrips* Haliday

Chirothrips Haliday, 1836: 444. Type species: *Thrips* (*Chirothrips*) *manicata* Haliday, 1836.

Head small, compound eyes prominent. Antennae 8-segmented, short and broad, segment I broad, II produced at outer apex, III with simple sense cone, IV with simple or forked sense cone. Prothorax trapezoidal. Posterior angular of pronotum each with 2 long setae. Female macropterous, forewing vein setae arranged unevenly. Fore femora enlarged. Male brachypterous or apterous. About 40 species worldwide.

Key to species of *Chirothrips* in Taiwan

1. Produced apex of antennal segment II without seta; posteromarginal craspeda irregular serrated .....*africanus*
-- Produced apex of antennal segment II with one seta; posteromarginal craspeda not serrated 2
2. Forewing lower vein with 5 setae; abdominal tergites I-VI without wavy striae ..... *menicatus*
-- Forewing lower vein with 3 setae; abdominal tergites I-VI with wavy striae ..... *mexicanus*

Chirothrips africanus Priesner (Figs. 51A, B, E, H)

Chirothrips africanus Priesner, 1932a: 46, 47.

Female body length 1.5 mm on slide. Brown; antennae brown, segment III paler; forewings grayish brown; legs brown, tarsi yellow.

Small head with short cheeks, ocelli situated on posterior half of head; vertex with 3 pairs of short setae; maxillary palpi 3-segmented; labial palpi 2-segmented. Antennae 8-segmented, segment I large, II produced at outer apex, without seta on projection, III – V rounded, simple sense cone on III and IV.

Prothorax trapezoidal, pronotum with dense transverse striae, setae short, posterior angular each with 2 longer setae. Anterior margin of mesosternum with about 30 short setae. Forewing upper vein with 5-7 basal setae and 2 distal setae, lower vein 3 setae, unevenly arranged; posterior fringe wavy. Legs with transverse striae, fore femora enlarged, tibia short, tarsi 2-segmented.

Abdominal tergites with transverse striae, posterior marginal membrane (craspeda) serrated, sternites II-VI with posterior serrates. VIII without posterior comb, tergite X split incompletely; sternites without discal setae.

Male similar to female but smaller and paler. Forewing reduced to wing pad, without ocelli. Sternites III-VII with small glandular area.

Distribution: Taiwan, India, Cyprus, Egypt, Sudan, Ethiopia.

Habitat: *Cynodon dactylon*, *Eragrostis bipinnata*, *Panicum turgidum*, I*mperata cylindrical*, *Sorghum vulgare*, *Cyperus* sp., *Cladium mariscus*, *Medicago sativa*, *Miscanthus* sp.

Remarks: Kudo (1974) collected one specimen from Taiwan and take it <tentatively> as this species. The existence of this species need to be confirmed with more collections.

Chirothrips manicatus (Haliday) (Figs. 51A, C, F, I)

Timothy thrips

Thrips manicatus Haliday, 1836: 444.
Thrips longipennis; Burmeister, 1838: 413.
Chirothrips longipennis (Burmeister): Amyot & Serville, 1843: 2.
Chirothrips takahashii Moulton, 1928a: 289, 324.
Chirothrips ambulans Bagnall, 1932b: 185.
Chirothrips laingi Bagnall, 1932b: 185.
Chirothrips bagnalli Hood, 1938: 162.

Female body length 0.8-0.9 mm on slide. Brown, abdomen paler; antennae brown, segment I darker; forewings grayish brown; legs brown.

Small head with short cheeks, ocelli situated on posterior half of head; vertex with 2-3 pairs of short setae; maxillary palpi 3-segmented; labial palpi 2-segmented. Antennae 8-segmented, segment II produced at outer apex, with one seta on projection, III – V rounded, simple sense cone on III and IV.

Prothorax trapezoidal, pronotum with dense transverse striae, setae short, posterior angular each with 2 longer setae. Anterior margin of mesosternum with about 16 short setae. Forewing upper vein with 6-7 basal setae and 2 distal setae, lower vein 5 setae, unevenly arranged; posterior fringe wavy. Legs with transverse striae, fore femora enlarged, tibia short, tarsi 2-segmented.

Abdominal tergites with similar transverse striae; tergite VIII without posterior comb; tergite X split completely. Sternites I-VI with posterior serrates; sternites without microtrichia or discal setae.

Male similar to female but smaller and paler. Forewing reduced to wing pad, without ocelli. Sternites II-VII with elliptical glandular area.

Distribution: Taiwan, North America, Islands of West Indies, Europe, Japan, Hawaii, Australia, New Zealand.

Habitat: Various grasses such as *Miscauthus* sp.

Chirothrips mexicanus D. L. Crawford (Figs. 51A, D, G, J)

Chirothrips mexicanus D. L. Crawford, 1909: 114.

Female body length 1.2-1.5 mm on slide. Brown, abdomen paler, tergites II-VIII yellow or light brown, tergites IX and X brown; antennae brown, segment I dark brown, II yellow; forewings grayish brown; legs brown, tarsi yellow.

Small head with short cheeks, ocelli situated on posterior half of head; vertex with 3 pairs of short setae; maxillary palpi 3-segmented; labial palpi 2-segmented. Antennae 8-segmented, segment I large, II produced at outer apex, with one seta on projection, III – V rounded, simple sense cone on III and IV.

Prothorax trapezoidal, pronotum with dense transverse striae, setae short, posterior angular each with 2 longer setae. Anterior margin of mesosternum with more than 50 short setae. Forewing upper vein with 6-7 basal setae and 2 distal setae, lower vein 3 setae, unevenly arranged; posterior fringe wavy. Legs with transverse striae, fore femora enlarged, tibia short and outer apex produced to exceed 1st segment of tarsi, tarsi 2-segmented.

Abdominal tergites with transverse striae; tergites I-VI and sternites II-V with anterior marginal scallops; tergite VIII without posterior comb; tergite X split completely. Sternites without discal setae.

Male similar to female but smaller and paler. Forewing reduced to wing pad, without ocelli. Sternites II-VII with rounded glandular area.

Distribution: Cosmopolitan.

Habitat: *Digitaria viclascens*, *Chloris barbata*, *Cenchrus calyculatus*, *Brassica* sp., *Brachiaria mutica*, *Mussaenda taiwaniana*, *Solanum nigrum*, *Pueraria Montana*, D*actyloctenium aegyptium*, *Zea mays*.

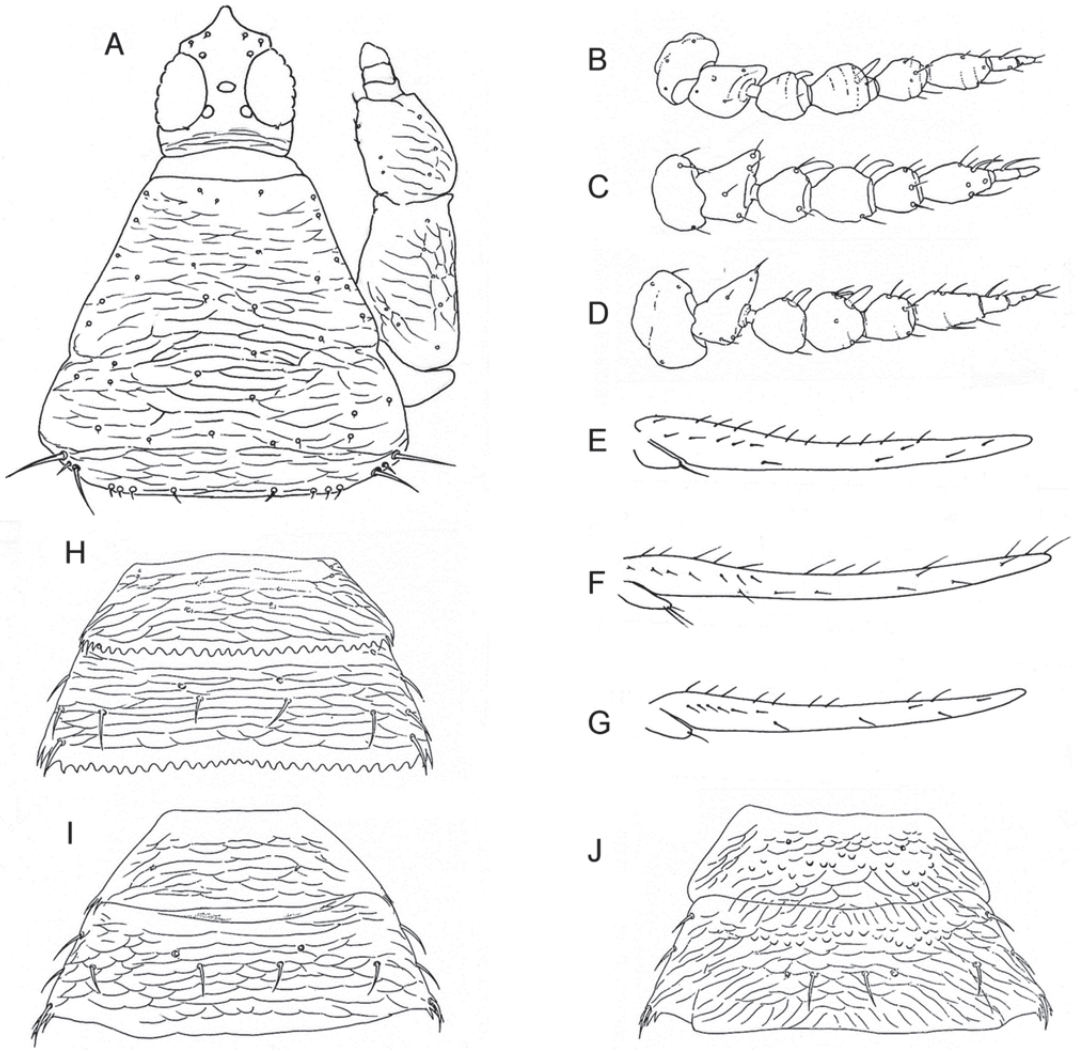

Fig. 51. *Chirothrips*: A. head and pronotum; antenna (B-D): B. *africanus,* C. *manicatus*, D. *mexicanus* ; forewing (E-G): E. *africanus*, F. *manicatus*, G. *mexicanus*; tergites II and III (H-J) : H. *africanus*, I. *manicatus*, J. *mexicanus.*

Genus *Craspedothrips* Strassen

Craspedothrips Strassen, 1966: 444-445. Type species: *Physothrips hargreavesi* Karny.

Female antennal segment V with 3 simple sense cone; head with 2 pairs of anteocellar setae; forewing upper vein with 2 distal setae; abdominal tergites and sternites with posterior flange. Male antennal segments IV-VI long, with many long setae. About 10 species in the world.

Craspedothrips minor (Bagnall) (Fig. 52)

Physothrips minor Bagnall, 1921: 393-394.
Physothrips thunbergiae Karny, 1923: 302-305.
Toxothrips vicnus Bhatti, 1967: 16-17.
Tsengothrips plumosa Chen, 1975: 107-109.

Female body length 1.1 mm on slide. Head and thorax brown, abdomen grayish brown; antennal segments I and II yellowish brown, III light yellowish brown, IV-VIII grayish brown; legs brown, tibiae and tarsi paler; forewing grayish brown, lighter in color at base.

Head small and wider than long, cheeks shorter than compound eyes. Interocellar setae long, arising inside ocellar triangle, near anterior margin of posterior ocelli; post ocular area with short setae and transverse striae. Antennae 8-segmented, segments III and IV with forked sense cone.

Pronotum with 2 long setae on posteromarginal angular, 3 pairs of posteromarginal setae with innermost pair longest, about 30 discal setae; mesofurca with spine, metafurca without spine. Upper vein of forewing with about 15 setae from base and 2 distal setae, lower vein with 13-14 evenly arranged setae.

Abdominal tergites and sternites II-VII with posterior flange; tergite VIII without posterior comb, only few minute microtrichia on laterals; tergite X split incompletely.

Male smaller than female. Antennal segments I and II brown, III-VIII grayish yellow. segments IV-VI hairy, much longer than other segments.

Distribution: Taiwan, India, Indonesia, Phillipines.

Habitat: *Bischofia javanica Blume*, *Palmae*, *Prunus salicina*.

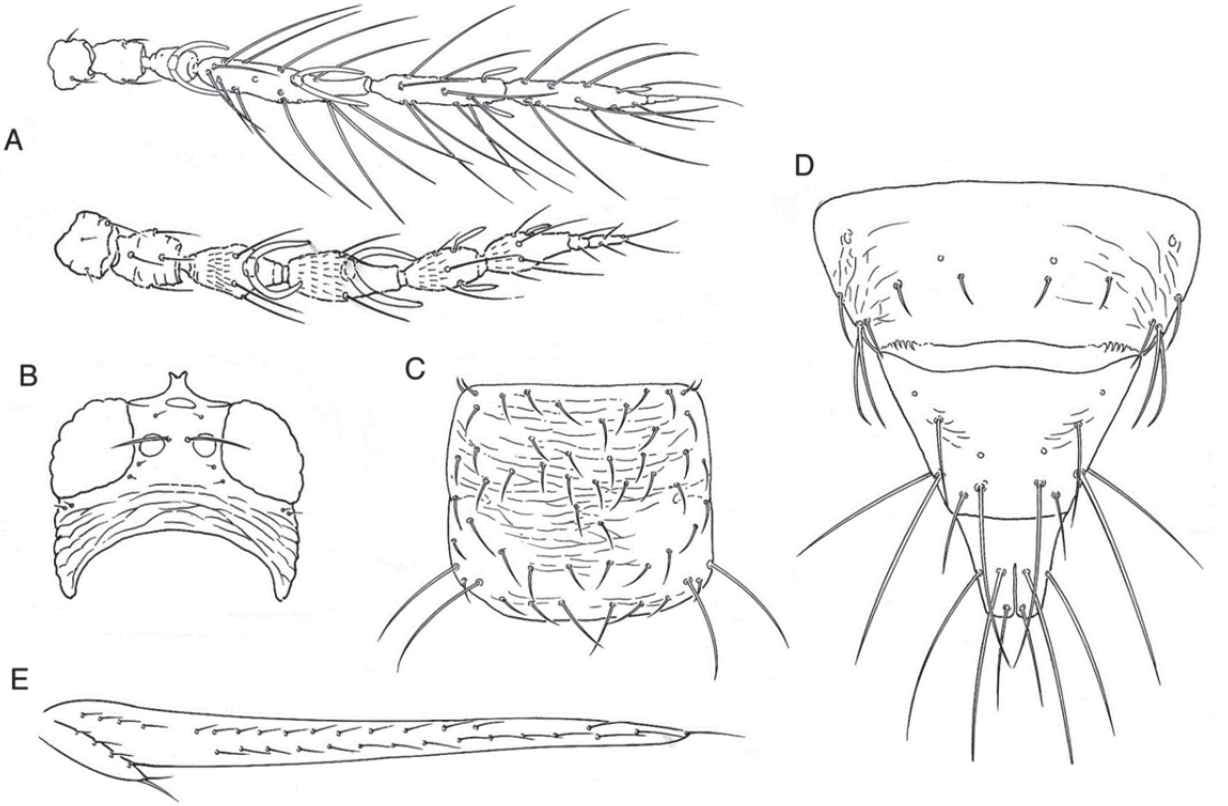

Fig. 52. *Craspedothrips minor* A. antenna upper: ♀, lower: ♂; (♀)B. head; C. pronotum; D. tergites VIII-X; E. forewing.

Genus *Ctenothrips* Franklin

Ctenothrips Franklin, 1907: 247. Type species: *Ctenothrips bridwelli* Franklin, 1907.

Head longer than wide, vertex elevated forwardly. Antennae 8-segmented. Pronotum almost rounded, lateral posteroangular each with 2 long setae. Upper vein of forewing well-developed. Surface of abdomen with reticulations. Posterior laterals of tergite VIII concaved; comb complete; tergite X split completely. About 13 species in the world.

Ctenothrips transeolineae Chen

Ctenothrips transeolineae Chen, 1979b: 184-187.

Female body length 1.7 mm on slide. Color and surface sculpture similar to male, abdominal tergite VIII with reticulations only on anterior half; tergite IX without thorn-like setae; tergite X completely covered with reticulations; sternites without glandular area.

Male body length 1.5 mm on slide. Body dark brown, thorax paler, abdominal segment X yellowish brown; antennal segments I and II dark brown, III yellow with basal 1/4 dark brown, IV and V grayish yellow with distal end of V grayish, VI brown, VII and VIII grayish brown; forewing brown, basal 1/4 paler.

Head longer than wide, cheeks constricted behind compound eyes, transverse lines posterior to compound eyes. Compound eyes large and protruded, one pair of anteocellar setae, one pair of interocellar setae situated between rear margin of posterior ocelli. Maxillary palpi 3-segmented, antennae 8-segmented.

Pronotum with transverse striae, posterior portion with 4 spots, posterolaterals each with 2 long setae, meso- and metafurca without spine, forewing with 21-22 costal setae, 12-16 setae on upper vein and 11-14 setae on lower vein.

Abdominal tergites and sternites I-VIII with reticulated sculpture, comb on tergite VIII complete, tergite IX with one pair of thorn-like setae; sternites without discal setae, sternites III-VIII with cylindrical glandular area.

Distribution: Taiwan.

Habitat: various grasses.

Ctenothrips kwanzanensis Takahashi (Fig. 53)

Ctenothrips kwanzanensis Takahashi, 1937: 339, 349, 350.

Female body length 1.8 mm on slide. Dark brown, antennal segments I and II dark brown, III yellow but brownish in middle, IV and V brown but basal 1/2 of IV and basal 1/3 of V yellow, VI - VIII brown; forewing brown, subbasal area in lighter color. Fore femora dark brown, tibiae grayish brown, mid and hind legs dark brown, base of mid femora and bases of mid and hind tibiae yellow, tarsi yellow with distal ends brown.

Head longer than wide, cheeks constricted behind compound eyes, about twice the length of compound eyes. One pair of anteocellar setae, one pair of interocellar setae situated in ocellar triangular area, between anterior margins of 2 posterior ocelli. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone.

Pronotum rounded; posterolaterals each with 2 long setae, inner pair longer; anteromargin with one pair of long setae, about half the length of posterolateral setae. Meso- and metanotum with reticulations, both furcae without spine. Forewing with 9 basal setae and 12 distal setae on upper vein, 17 setae on lower vein, even and complete.

Abdominal tergites I-VIII with reticulated sculpture, comb on tergite VIII complete, tergite X tubular, split completely.

Male body length 1.5 mm on slide. Abdominal sternites III-VIII with transverse glandular area, sternite IX with one pair of short thorn-like setae

Distribution: Taiwan.

Habitat: Flowers of Compositae.

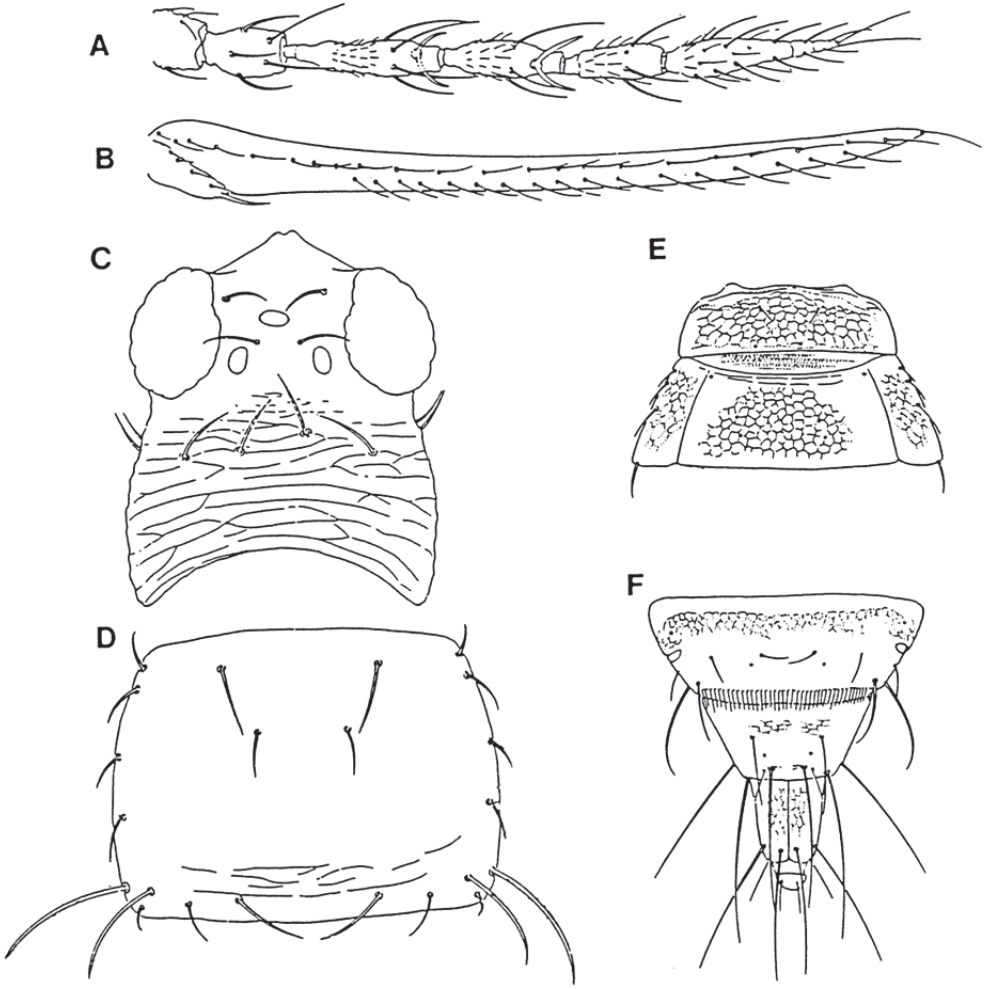

Fig. 53. *Ctenothrips kwanzanensis* (♀)A. antenna; B. forewing; C. head; D. pronotum; E. tergites I and II; F. tergites VIII-X.

Genus *Danothrips* Bhatti

Danothrips Bhatti, 1971: 337. Type species: *Danothrips setifer* Bhatti, 1971.

Body light yellow. Head wider than long. Antennae 8-segmented, segments III and IV with simple or forked sense cone. Pronotum with 7 pairs of setae on posterior margin, outer 1st and 3rd pairs longer. Mesofurca with spine, metafurca without spine. Forewing upper vein with 6-7 basal setae, 3 distal setae wide apart; lower vein with 4 setae. Abdominal segments without posterior flange; stippled area on tergite VIII not well-developed; tergite X not split. Male abdomen without glandular areas. About 10 species in the world.

Key to species of *Danothrips* in Taiwan

1. Antennal segment III and IV with simple sense cone .....*sakimura*
-- Antennal segment III and IV with forked sense cone.....2

2. Forewing with 2 grayish brown areas..... *vicinus*
-- Forewing with 3 grayish brown areas; anterolateral of pronotum concaved slightly .....
.....*trifasciatus*

Danothrips sakimurai Chen

Danothrips sakimurai Chen, 1979a: 417.

Female body length 1.2 mm on slide. Body and legs light yellow; antennae light yellow, except distal end of segment III, distal 1/3 of IV and of V, segments VI-VIII grayish brown; forewing whitish yellow with basal, median and subapical grayish brown bands.

Head wider than long, an evident transverse line on occiput. One anteocellar setae on each side of anterior side of ocellus; one pair of interocellar setae, situated in front of posterior ocelli. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with single sense cone.

Posteroangulars of pronotum each with 2 long setae, inner pair longer; 4 pairs of median posteromarginal setae. Mesonotum covered with striae. Forewing with 19 costal setae; upper vein with 10 setae, lower vein with 4 setae, arranged irregularly. Tarsi 2-segmented.

Abdominal tergites without posterior flange; tergite I-VIII covered with transverse striae; laterals of tergite VIII with stippled areas, without posterior comb; tergite IX with 3 pairs of major setae; tergite X not split, with 2 equal-length main setae. Sternites III-VII each with 3 pairs of marginal setae, without discal setae.

Male unknown.

Distribution: Taiwan.

Habitat: *Acacia confuse*.

Danothrips trifasciatus Sakimura (Fig. 54)

Danothrips trifasciatus Sakimura, 1975: 125.

Female body length 1.1-1.4 mm on slide. Body yellow with ovipositor yellowish brown; legs light yellow; antennae light yellow, except distal 1/4 of both IV and V grayish brown, distal 3/4 of VI brown, segments VII and VIII grayish brown; forewing whitish yellow with basal, median and subapical grayish brown bands.

Head wider than long, an evident transverse line on occiput. One pair of anteocellar setae near anterior side of compound eyes, one pair of interocellar setae, situated in front of posterior ocelli. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with single sense cone, 2 sense cones on V about same length.

Anterolateral angles of pronotum slightly concaved, posteroangulars each with 2 long setae, inner pair longer; 4 pairs of median posteromarginal setae. Meso- and metafurca without spinula. Forewing with 16-21 costal setae; upper vein with 10 setae, lower vein with 4 setae, arranged irregularly. Tarsi 2-segmented.

Abdominal tergites without posterior flange; laterals of tergite VIII with stippled areas, without posterior comb; tergite IX with 3 pairs of major setae; tergite X not split, with 2 equal-length long setae. Sternites III-VII each with 3 pairs of marginal setae, without discal setae.

Distribution: Taiwan, US (Hawaii, Florida), Caribean, Sumatra, Australia.

Habitat: *Anthurium andreanum*, *Bugainvillea* sp., *Zingiber zerumbet*, *Alpinia purpurata*, *Paspalum orbiculare*, *Acacia confuse*, *Wahiawa parsley*, *Ipomoes alba*, *Cinnamomum camphora*, *Ficus macrocarpa*, *Terminalia* sp., *Morus alba*.

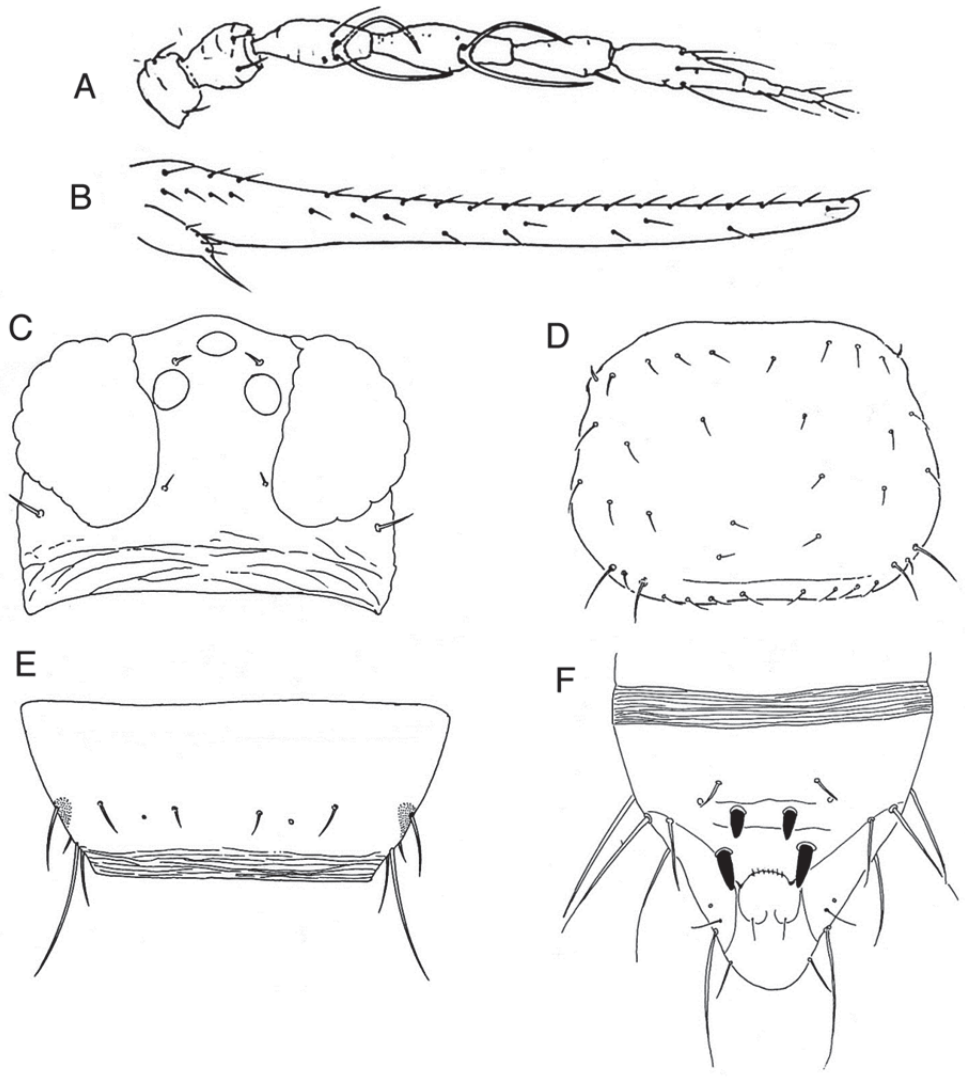

Fig. 54. *Danothrips trifasciatus* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. tergite VIII; (♂) F. abdominal sternites terminal.

Danothrips vicinus Chen

Danothrips vicinus Chen, 1979: 417.

Female body length 1.1-1.4 mm on slide. Body yellow with ovipositor yellowish brown; legs light yellow; antennae light yellow, except distal half of segment VI brown, segments VII and VIII grayish brown; forewing whitish yellow with basal and median grayish brown areas.

Head wider than long, an evident transverse line on occiput. One pair of anteocellar setae near anterior side of compound eyes, one pair of interocellar setae, situated in front of posterior ocelli. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with single sense cone, 2 sense cones on V about same length.

Posteroangulars each with 2 long setae, inner pair longer; 4 pairs of median posteromarginal setae. Meso- and metafurca without spinula. Forewing with 21-22 costal setae; upper vein with 9-10 setae, lower vein with 4 setae, arranged irregularly. Tarsi 2-segmented.

Abdominal tergites without posterior flange; laterals of tergite VIII with stippled areas, without posterior comb; tergite IX with 3 pairs of major setae; tergite X not split. Sternites III-VII each with 3 pairs of marginal setae, without discal setae.

Male unknown.

Distribution: Taiwan.

Habitat: *Rhododendron* sp., *Mirabilis* sp., *Camelia sinensis*, *Acacia confuse*, *Podocarpus macrophyllus*, *Michelia fuscata*, *Calocedrus formosana*.

Genus *Dichromothrips* Priesner

Dichromothrips Priesner, 1932b: 110. Type species: *Dichromothrips orchidis* Priesner, 1932.

Antennae 8-segmented; segments III and IV longer, vasiform, forked sense cone slender; distal end of V and base of VI about same width. Discal setae of pronotum short, posteromargin with 5 pairs of setae. Vein setae on forewing well-developed. Posterior comb on abdominal tergite VIII complete. Tergite X not split. Sternites without discal setae, Male abdominal sternites III-VII with paired glandular areas. Tergite IX without stout setae.

Over 18 species in this genus of the world. Species of this genus are often pests of orchids. The two species of Taiwan can be separated by the posteromarginal setae on pronotum.

Dichromothrips corbetti (Priesner) (Fig. 55)

Vanda thrips

Anaphothrips corbetti Priesner, 1936b: 209.

Dichromothrips corbetti (Priesner): Sakimura, 1955: 586, 588, 590, 592, 597.

Female body length 1.1-1.4 mm on slide. Body brown with red pigment on ocellar area, thorax and abdomen; antennal segments I and II same color as head and with red pigment, III brown at base and paler distally, IV-VIII brown; forewing brown, color lighter near base; legs brown, fore tibia, distal ends of mid and hind tibiae yellow, all tarsi yellow.

Head wider than long, cheeks parallel, over 10 transverse striae on occiput. Anteocellar setae situated on each side of anterior ocellus; interocellar setae in front of posterior ocelli, outside of

ocellar triangular area. A row of about 5 short setae behind compound eyes. Mouth cone reach base of fore legs. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV vasiform, with forked sense cone.

Pronotum covered with transverse striae, without long setae. Mesofurca with spinula, metafurca without spinula. Forewing with well-developed vein setae, upper vein with 10-11 basal setae, one median seta, 2 distal setae, posterior fringe wavy.

Transverse striae on abdominal tergites I and II and laterals of tergites III-VII; all tergites without discal microtrichia; tergite VIII with complete comb, teeth of comb long and dense; tergite X no split. Sternites without discal setae.

Male (brachypterous) body length 1.1 on slide. Grayish brown, darker on head, prothorax and abdominal segments IX and X, abdominal segments III-VII in paler color. Abdominal sternites III-VII with paired glandular areas.

Distribution: Taiwan, Malaysia.

Habitat: *Vanda* sp., *Dendrobium* sp., *Miltonia* sp., *Cattlcya* sp., *Renanthera storiei*.

Remark: Both larvae and adults damage orchid flowers, occasionally occurred together with *D. smithi*.

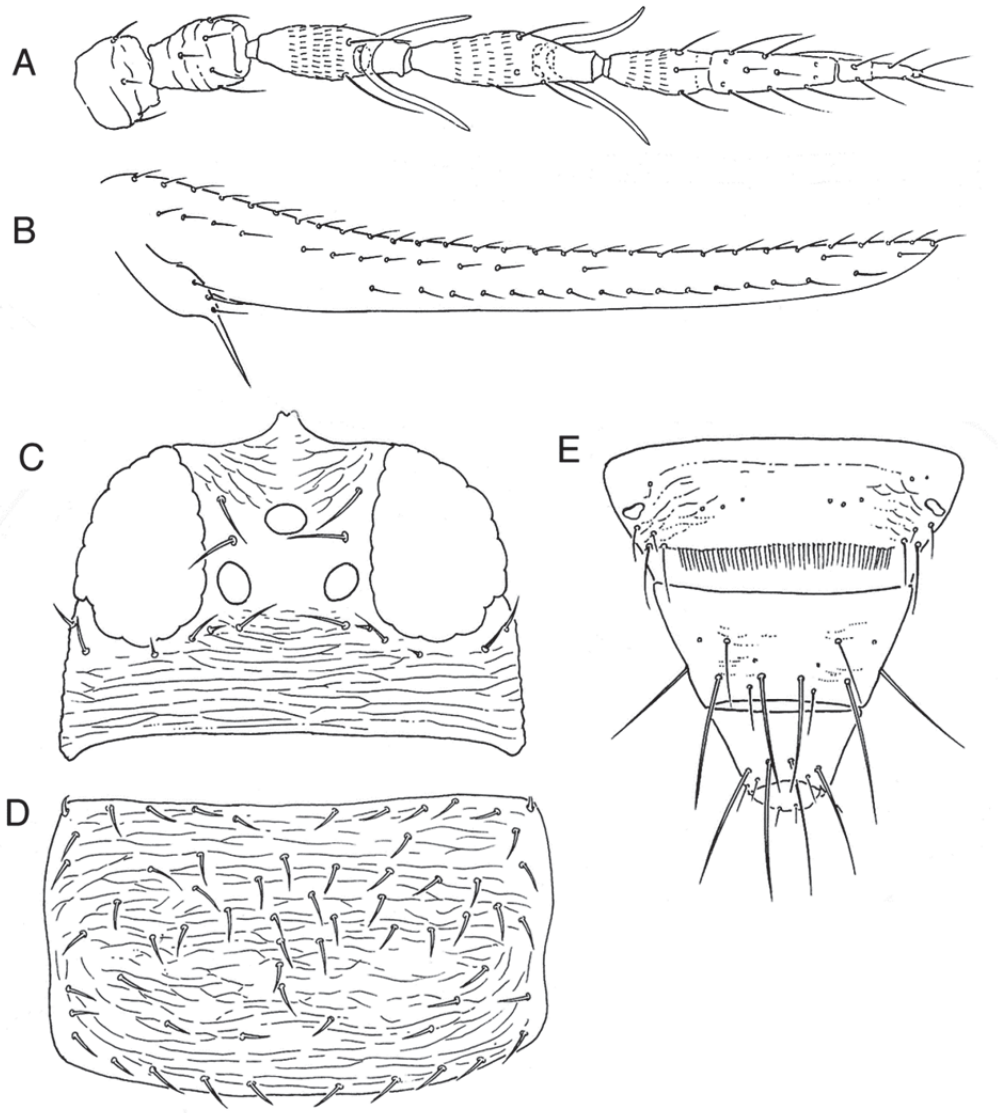

Fig. 55. *Dichromothrips corbetti* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. tergites VIII-X.

Dichromothrips smithi (Zimmermann) (Fig. 56)

Physopus smithi Zimmermann, 1900: 10.
Taeniothrips smithi (Zimmermann): Steinweden, 1933: 288.
Dichromothrips smithi (Zimmermann): Sakimura, 1955: 586, 588, 596, 597.

Female body length 1.4 mm on slide. Body brown with red pigment on ocellar area, thorax and abdomen; antennal segments I and II same color as head and with red pigment, distal ends of III and IV and base of V light yellow, the rest segments brown; forewing brown, paler near base; legs brown, fore tibia, distal half of mid and hind tibiae yellow, all tarsi yellow.

Head as wide as long, cheeks parallel, over 10 transverse striae on occiput. Anteocellar setae on each side of anterior ocellus; interocellar setae situated between outer margin of anterior and posterior ocelli. A row of short setae behind compound eyes. Mouth cone reach base of fore legs. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV vasiform, with forked sense cone.

Pronotum covered with transverse striae, one ling seta on each side of posterior angle, 2 pairs of short setae inside. Meso- and metafurca with spinula. Forewing with well-developed vein setae, upper vein with 8 basal setae, one median seta, 2 distal setae, posterior fringe wavy.

Transverse striae on abdominal tergites I and II and laterals of tergites III-VII; all tergites without discal microtrichia; tergite VIII with complete posterior comb, teeth of comb long and dense; tergite X no split. Sternites without discal setae.

Male head dark brown, grayish brown on pterothorax, abdominal segment II and median of segments III-VIII, the rest of body and all legs yellow; forewing dark on middle and apical areas. Abdominal tergite IX with 2 pairs of stout setae, posterior pair longer; sternites III-VII with paired glandular areas.

Distribution: Taiwan, Japan, Indonesia, India.
Habitat: *Vanda* sp., *Cattleya* sp., *Cymbidium* sp., *Saccarum sinensis*.

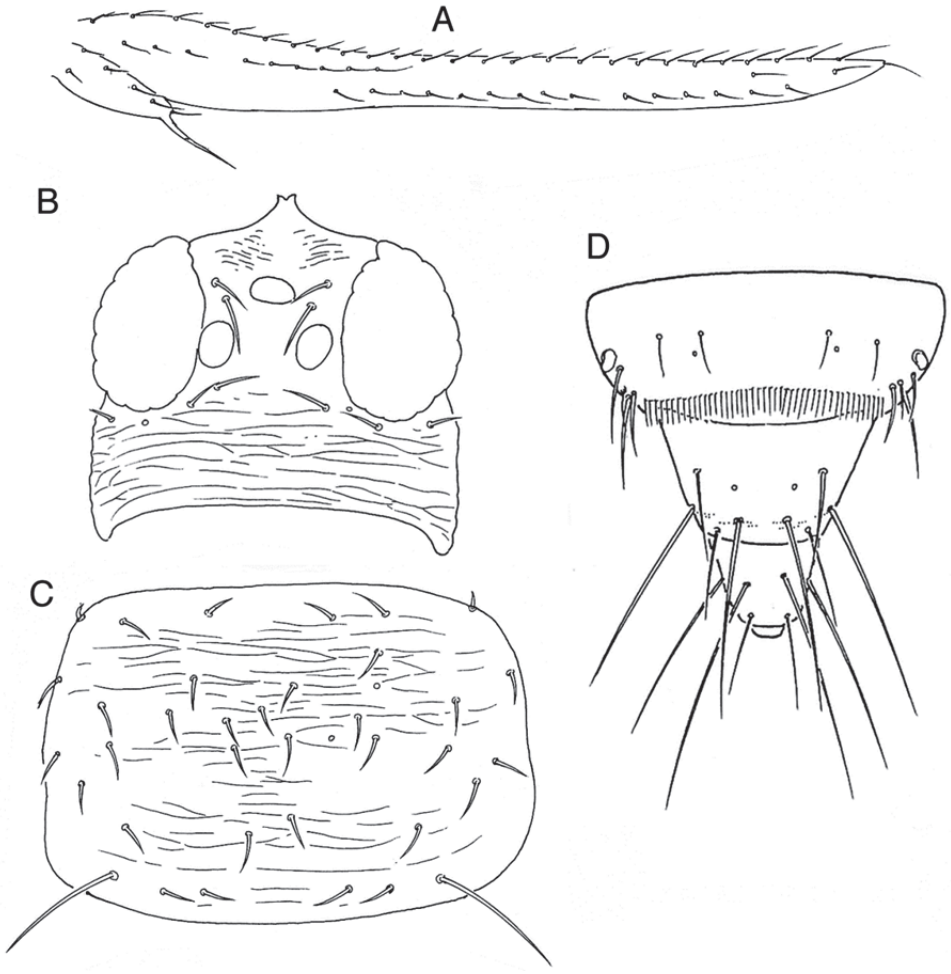

Fig. 56. *Dichromothrips smithi* (♀) A. forewing; B. head; C. pronotum; D. tergites VIII-X.

Genus *Echinothrips* Moulton

Moulton 1911: 37. Type species: *Echinothrips mexicanus* Moulton, 1911.

Body covered with reticulated sculpture, color and shape similar to genus *Hydatothrips* or genus *Neohydatothrips*. Antennal segment III with simple sense cone, and transverse rows of microtrichia. Pronotum with reticulations, without blotch. Vein setae of forewing with rounded or expended, or scattered terminals. Abdominal tergites III-VI with long median setae and situated close to each other. This genus was placed under tribe Sericothripini and now under tribe Thripini (or subfamily Thripinae). Seven species in the world.

Echinothrips americanus Morgan (Fig. 57)

Echinothrips americanus Morgan, 1913: 14.

Female body length 1.6 mm on slide. Body dark brown; antennal segments I and II dark brown, III, IV and base of V light yellow, other segments grayish brown; bases of femora, distal ends of tibiae and all tarsi yellow; forewing brown with basal, median, and apical light areas.

Head square, cheeks parallel, dorsum of head with reticulations, wrinkles inside. Antennae 8-segmented, segments III and IV with simple sense cone, VIII about twice the length of VII.

Pronotum with reticulated sculpture, small wrinkles inside reticulations; 2 pairs of long setae on posteroangular, one pair of setae on posteromargin, major setae blunt. meso- and metanotum with reticles and wrinkles; median setae of metanotum posterior to anterior suture, without campaniform sensilla. Setae of upper vein of forewing blunt, arranged completely, lower vein with no seta.

Abdominal tergites II-VII with rows of microtrichia on laterals; median pair setae on tergites III-VI long and close to each other; tergite VIII with posterior comb complete; tergite X not split.

Distribution: Expanded from US to European countries, also recorded in Thailand, Taiwan.

Habitat: Polyphagous, common on greenhouse and open field crops.

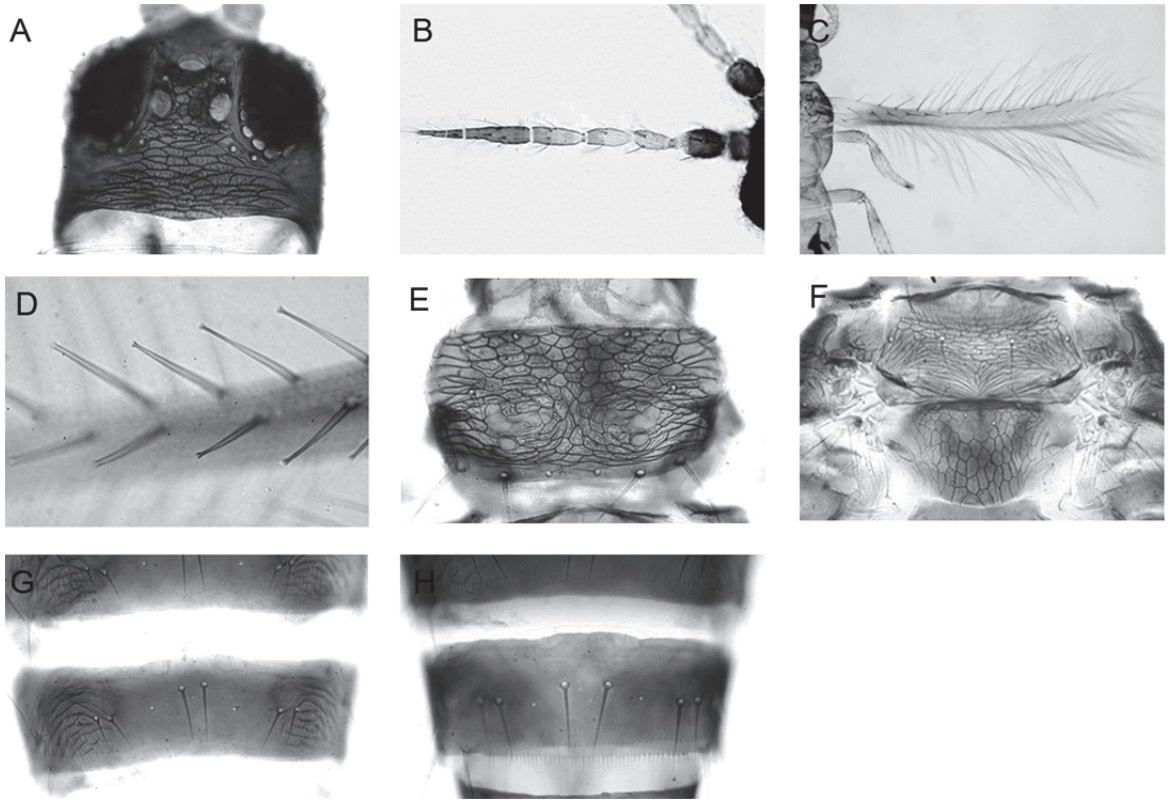

Fig. 57. *Echinothrips americanus* (♀) A. head; B. antenna; C. forewing; D. vein setae on forewing; E. pronotum; F. tergite VI; G. tergite VIII.

Genus *Frankliniella* Karny

Frankliniella Karny, 1910: 46. Type species: *Thrips intonsa* Trybom, 1914.

Head wider than long, 2 pairs of anteocellar setae, one pair of interocellar setae, long or short, ocular setae developed. Antennae 8-segmented. Pronotum with 4 pairs of long setae: one pair on anterior margin, one on each anterior angle, 2 on each posterior angle, and 5 pairs of posteromarginal setae. Both upper and lower vein setae on forewing arranged even and complete. Ctenidia near spiracles of abdominal tergites V-VIII, ahead of spiracle. Male abdominal sternites without discal setae, sternites III-VII with glandular areas. About 150 species in the world, mostly occurred in subtropical areas.

Key to species of *Frankliniella* in Taiwan

1. Antennal segment II with 2 stout distal setae, each on a projection ..... *cephalica*
-- Antennal segment II normal without such stout setae 2

2. Comb on abdominal tergite VIII lacking or only on laterals, at least lacking on the middle 1/3 ..... *schultzei*
-- Comb on abdominal tergite VIII complete 3

3. Pronotum with one pair of short anteromarginal setae between long angular setae, body and main setae dark..... *intonsa*
-- Pronotum with 2 pairs of short anteromarginal setae between long angular setae, body and main setae light yellow ..... *williamsi*

Frankliniella cephalica (D.L. Crawford) (Figs. 58-1, 58-2)

Euthrips cephalicus DL Crawford 1910: 153.
Frankliniella cephalica Karny 1912: 335.

Female body length 1.3-1.7 mm on slides. Yellow, some individuals with brownish head and thorax, major setae dark; antennal segment I yellow, II and III yellow with brown distal 1/2, IV brown with yellow basal 1/3, V yellow with brown distal end, VI-VIII brown.

Head a little wider than long, interocellar setae situated on edge of ocellar triangle, postocular setae i-iii about same length, setae iv longer, about 2/3 length of interocellar setae. Antennal 8-segmented, segment II with 2 stout dorsal distal setae each situated on a projection, III with a sharp-ridged pedicel ring, III and IV with forked sense cone.

Pronotum with 2 pairs of long setae on anterior margin (anteromarginal and anteroangulars), and 2 pairs of long posteroangulars; posterior margin with 5 pairs of setae, the second pair from center longer. Metanotum with paired campaniform sensilla. Metanotal median setae arising at anterior margin of this sclerite. Forewing with complete rows of setae on both upper and lower veins. Tarsi 2-segmented.

Anterior margin of pronotum with one pair of long setae, and one pair of short setae in between; 2 long setae on each anterior angle, and 2 long setae on each posterior angle; posterior margin with 5 pairs of setae, the second pair from center longer. Mesofurca small and with spinula, metafurca without spinula. Vein setae long, upper vein with 18-21 setae, lower vein with 12-15 setae, even and complete; posterior fringe wavy. Inner side of distal end of tibia with 2 strong spines, a row of 5-7 spines followed on hind tibia, tarsi 2-segmented.

Posterior comb o tergite VIII with a few teeth on lateral, lacking in middle.Sternites III-VII with 3 pairs of posteromarginal setae, long and well-developed.

Male similar to female but smaller; sternites III–VII medially with broadly oval pore plate

Habitat: *Cascuta australis*, *Mikania cordata*, *Miscanthus transmorrisonensis* (Taiwan), *Bidens pilosa* flower, *Ipomoea batatas* (L.) (Masumoto and Okajima 2004) *indica*, *Ligustrum arboretum*, and a wide range of flowers (Mound and Marullo 1996).

Distribution: Taiwan, Japan; Bermuda, Caribbean islands, Central America, Mexico.

Remarks: This is a species with quite obvious characteristics. The protrusion of antennal segment II easily distinguishes it from other species in the Asian-Pacific area. It occurs in large numbers on field weeds. There is no report of damage to crops.

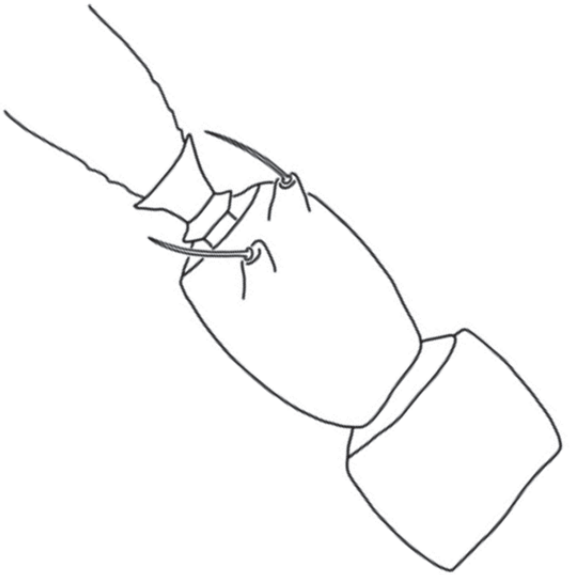

Fig. 58-1. Projections on antennal segment II of *F. cephalica*. (from Wang *et al.*, 2010)

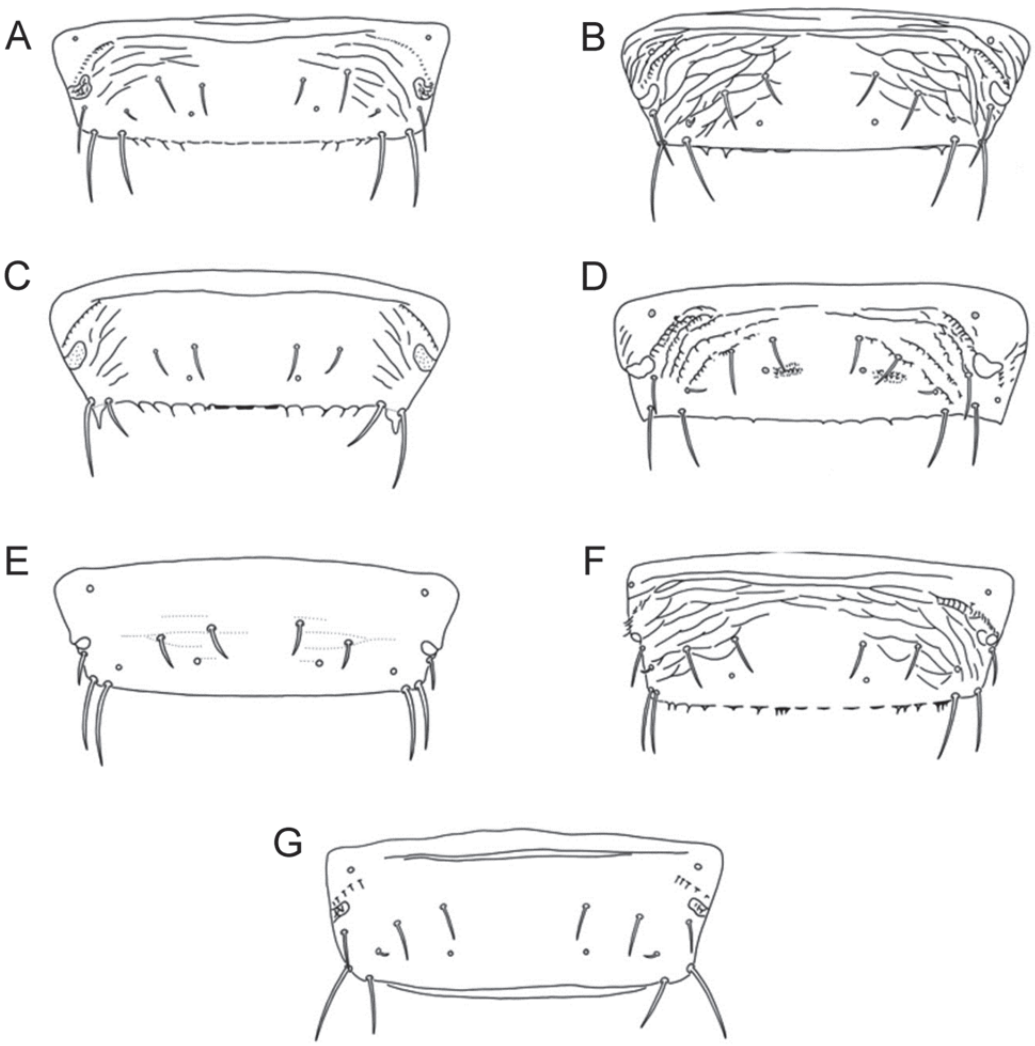

Fig. 58-2. Abdominal tergite VIII with incomplete (or lacking) posteromarginal comb: **A.** *Frankliniella cephalica*, **B.** *F. fusca*, **C.** *F. insularis*, **D.** *F. lilivora*, **E.** *F. schultzei*, **F.** *F. tenuicornis*, **G.** *F. zizaniophila*. (from Wang *et al*., 2010)

Frankliniella intonsa (Trybom) (Fig. 59)

Flower thrips

Thrips intonsa Trybom, 1895: 182, 188.
Thrips physapus Linne; Muller, 1776: 96.
Physopus vulgatissima (Haliday); Uzel, 1895: 32, 48, 95.
Physapus brevistylis Karny, 1908: 278.
Physopus intonsa (Trybom); Trybom, 1910: 153.
Frankliniella breviceps Bagnall, 1911: 2, 10.
Frankliniella vulgatissimus (Haliday); Bagnall, 1911: 10.
Frankliniella intonsa (Trybom); Karny, 1911a: 558.
Frankliniella brevistylis (Trybom); Karny, 1912: 336.
Euthrips gossypii Shiraki, 1912: 65-67.
Frankliniella formosae Moulton, 1928a: 291, 324.
Frankliniella gossypii (Shiraki); Hood, 1936: 68.

Female body length 1.3-1.7 mm on slide. Color on head, thorax and abdomen varied. Head and thorax pale brown, abdomen dark brown; or head and thorax brown, abdomen pale brown; or head, thorax and abdomen all brown; or head, thorax and abdomen all yellow. Antennal segment I grayish brown or brown, II dark brown, III yellow, bases of IV and V brown and distal ends yellow, VI-VIII dark brown; forewing light yellow; legs yellow, median of femora, mid and hind tibiae darker, all tarsi yellow.

Head a little wider than long, cheeks about same length as compound eyes, transverse striae behind compound eyes, occiput with obvious posteromarginal line. Interocellar setae long, situated in front of posterior ocelli, and on lines connect centers of anterior and posterior ocelli. Maxillary palpi 3-segmented, labial palpi 2-segmented. Antennae 8-segmented, segments III and IV with forked sense cone.

Anterior margin of pronotum with one pair of long setae, and one pair of short setae in between; 2 long setae on each anterior angle, and 2 long setae on each posterior angle; posterior margin with 5 pairs of setae, the second pair from center longer. Mesofurca small and with spinula, metafurca without spinula. Vein setae long, upper vein with 18-21 setae, lower vein with 12-15 setae, even and complete; posterior fringe wavy. Inner side of distal end of tibia with 2 strong spines, a row of 5-7 spines followed on hind tibia, tarsi 2-segmented.

Posterior comb on abdominal tergite VIII complete, composed of several to dozens teeth arising from triangular bases. Sternites III-VII with 3 pairs of posteromarginal setae, long and well-developed.

Male smaller than female, body length 1-1.2 mm on slide. Body light yellow, abdomen light brown; antennal segments I-V yellow, except bases of III and IV darker, base of V and segments VI-VIII brown. Abdominal tergite VIII without posterior comb; median of tergite IX with 2 pairs of stout setae; sternites III-VII with transverse glandular areas.

Distribution: Cosmopolitan.

Habitat: Flowers of various plants. It was a serious pest on vegetables, fruits and various ornamental flowers.

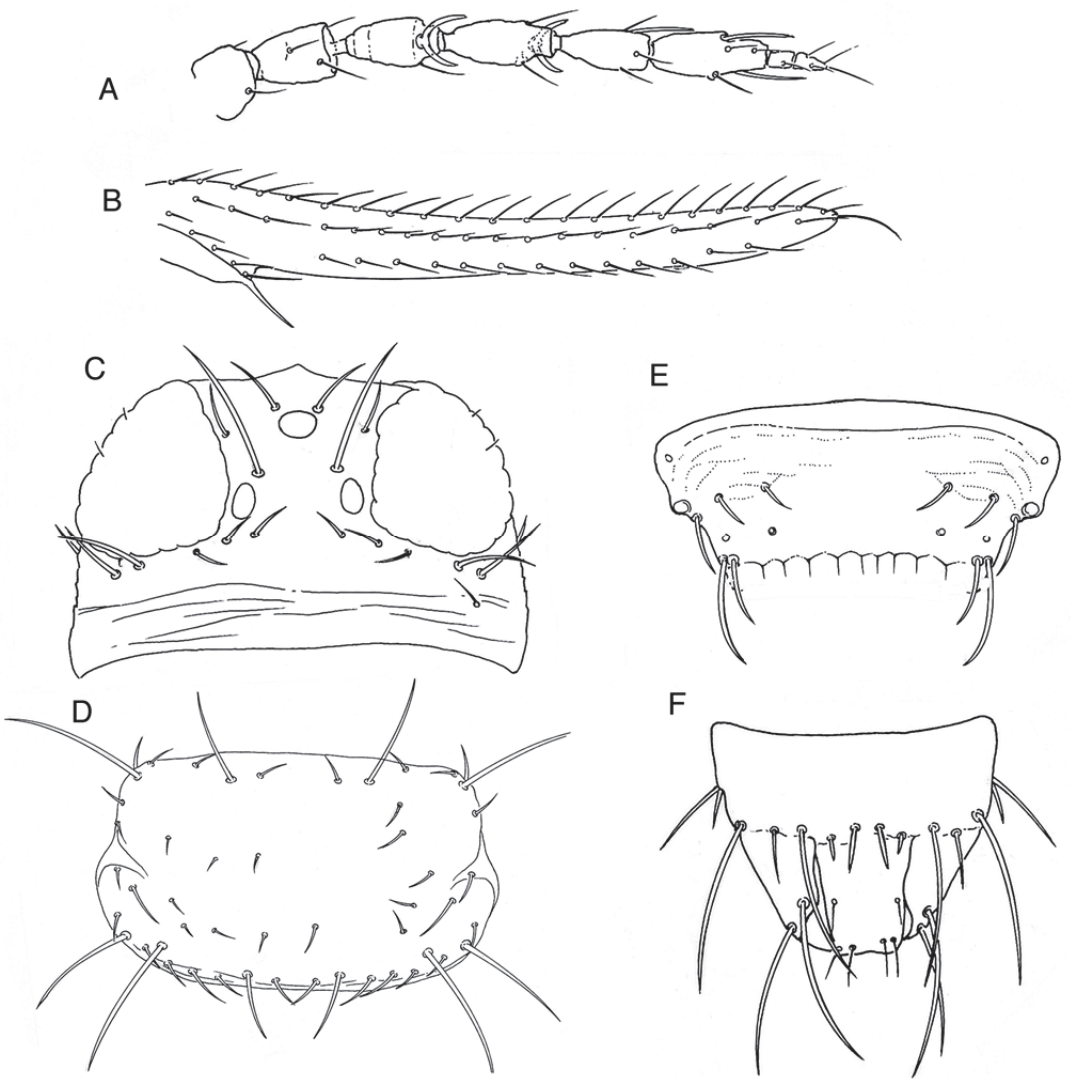

Fig. 59. *Frankliniella intonsa* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. tergite VIII; (♂)F. tergites IX and X.

Frankliniella schultzei (Trybom) (Fig. 60)

Common blossom thrips, Cotton bud thrips

Physopus schultzei Trybom, 1910: 151.

Frankliniella schultzei (Trybom); Karny, 1912: 334.

Euthrips gossypii Shiraki, 1912: 65-67.

Frankliniella sulphurea Schmutz, 1913: 1018, 1019.

Frankliniella delicatula Bagnall, 1919: 263.

Frankliniella trybomi Karny, 1920: 36.

Frankliniella dampfi Priesner, 1923a: 64.

Frankliniella africana Bagnall, 1926a: 100.

Frankliniella anglicana Bagnall, 1926b: 281.

Parafrankliniella nigripes Girault, 1928: 4.

Frankliniella insularis (Franklin); Morison, 1930: 11.

Frankliniella paucispinosa Moulton, 1933: 113, 122.

Frankliniella kellyana Bagnall; Kelly & Mayne, 1934: 20.

Frankliniella paucispinosus Moulton, 1935: 255.

Frankliniella pembertoni Moulton, 1940: 247.

Frankliniella clitoriae Moulton, 1940: 248.

Female body length 1-1.3 mm on slide. Dark form: either body brown, or head and thorax orange yellow with abdomen brown. Antennal segments I and II dark brown, the rest segments brown except bases of III and IV paler; forewing transparent. Light form: body light yellow. Antennal segments I and II grayish white with distal end of II yellowish, III-V grayish white at

base and pale brown at distal ends, VI-VIII brown; legs same color with body; wings transparent.

Head wider than long, compound eyes longer than cheeks, transverse striae behind compound eyes, occiput with obvious posteromarginal line. Interocellar setae long, situated inside ocellar triangular area, almost on lines connect anterior margin of 2 posterior ocelli. Ocular setae right behind compound eyes longest. Maxillary palpi 3-segmented, labial palpi 2-segmented. Antennae 8-segmented, segments III and IV with forked sense cone.

Anterior margin of pronotum with one pair of long setae, and one pair of short setae in between; 2 long setae on each anterior angle, and 2 long setae on each posterior angle; posterior margin with 5 pairs of setae, the second pair from center longest. Mesofurca small and with spinula, metafurca without spinula. Vein setae long, upper vein with 18-21 setae, lower vein with 12-15 setae, even and complete; posterior fringe wavy. Inner side of distal end of tibia with 2 strong spines, a row of 5-7 spines followed on hind tibia, tarsi 2-segmented.

Abdominal tergite VIII without posterior comb; tergite X split partially. Sternites III-VII with 3 pairs of posteromarginal setae, long and well-developed.

Male smaller than female, body length 1-1.2 mm on slide. Dark form: body brown, antennae brown, except bases of III - V paler. Median of abdominal tergite IX with 2 pairs of stout setae; sternites III-VII with transverse glandular areas.

Distribution: Taiwan, India, Sri Lanka, Pacific Islands, South America, UK, Italy, Africa.

Habitat: *Ipomoea reptans*, *Ipomoea cairica*, *Allamanda cathartica*, *Zea mays*, *Salvia farinacea*, *Zephyrznthes candida*, and *Thunbergia erecta*.

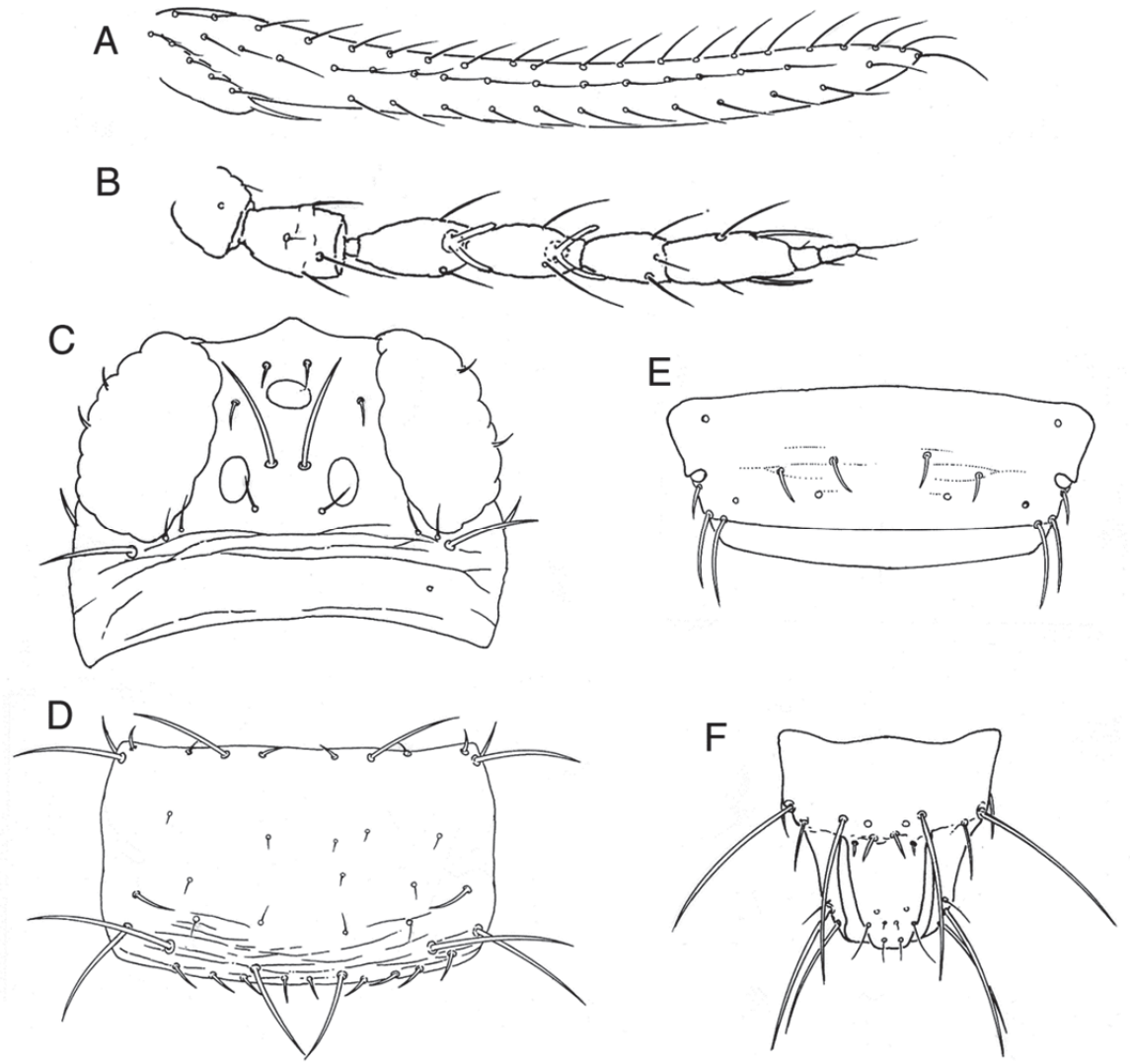

Fig. 60. *Frankliniella schultzei* (♀) A. forewing; B. anenna; C. head; D. pronotum; E. tergite VIII; (♂) F. tergites IX and X.

Frankliniella williamsi Hood (Fig. 61)

Maize thrips

Frankliniella williamsi Hood, 1915a: 19.
Frankliniella flavens Moulton, 1928a: 108, 132.
Frankliniella spinosus Moulton, 1936e: 61.

Female body length 1.3-1.5 mm on slide. Body light yellow. Antennal segment I-V light yellow, slightly darker with distal ends of II –V, VI yellow at base and brown at distal end, VII and VIII brown; forewing light yellow; legs light yellow.

Head a little wider than long, cheeks almost parallel, compound eyes shorter than cheeks. Weak transverse striae behind compound eyes. Interocellar setae long, situated in front of posterior ocelli, inside ocellar triangular area. 6 pairs of ocular setae. Maxillary palpi 3-segmented, labial palpi 2-segmented. Antennae 8-segmented, segments III and IV with forked sense cone.

Anterior margin of pronotum with one pair of long setae, and 2 pairs of short setae in between; 2 long setae on each anterior angle, and 2 long setae on each posterior angle; posterior margin with 5 pairs of setae, the second pair from center longer. Mesofurca small and with spinula, metafurca without spinula. Vein setae long, upper vein with 18-21 setae, lower vein with 12-15 setae, even and complete; posterior fringe wavy. Inner side of distal end of tibia with 2 strong spines, a row of 5-7 spines followed on hind tibia, tarsi 2-segmented.

Posterior comb on abdominal tergite VIII even and complete; tergite X split completely. Sternites III-VII with 3 pairs of posteromarginal setae, long and well-developed.

Male similar to female, smaller, body length 0.9 mm on slide. Abdominal tergite VIII with posterior comb, teeth sparse but completed; median of tergite IX with 2 pairs of stout setae.

Distribution: Taiwan, US, Mexico, Porto Rico, Cuba, Philippines, Hawaii.

Habitat: *Ipomoea reptans*, *Zea mays*, *Hgeratum conyzoides*.

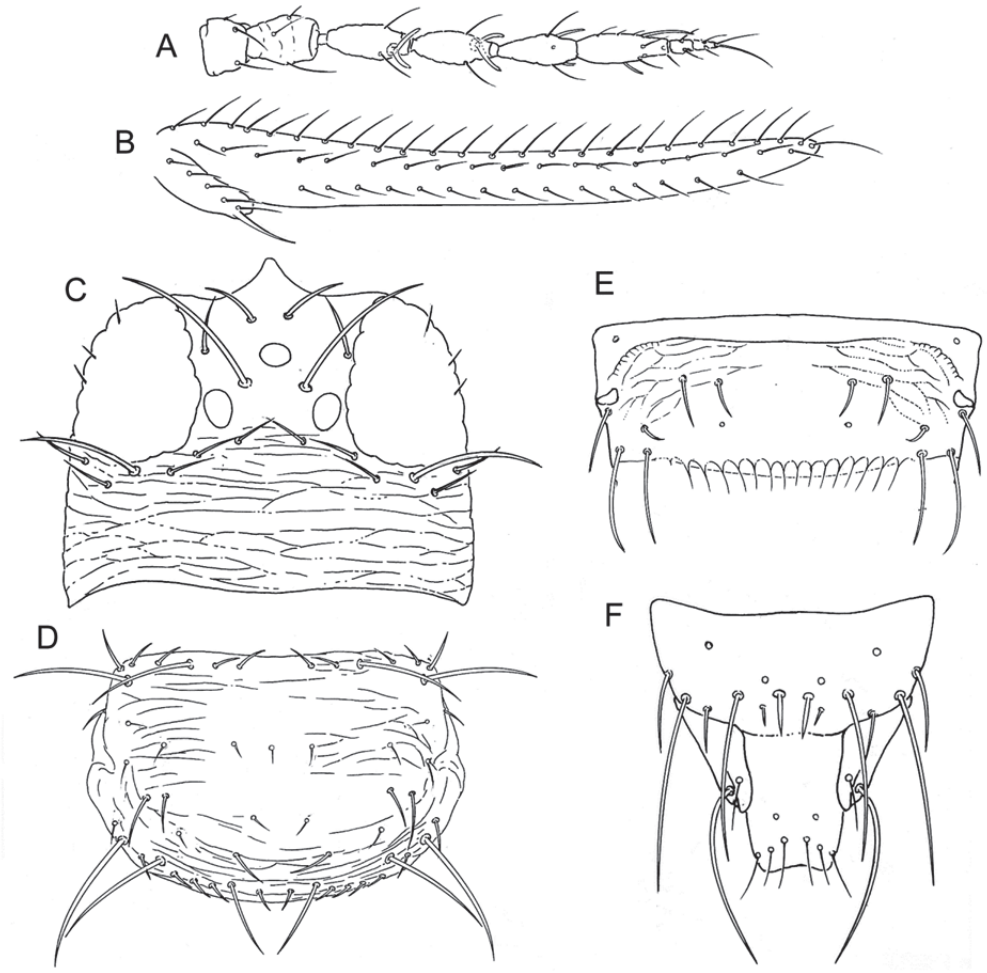

Fig. 61. *Frankliniella williamsi* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. tergite VIII; (♂) F. tergites IX and X.

Genus *Fulmekiola* Karny

Fulmekiola Karny, 1925: 18. Type species: *Fulmekiola interrupta* Karny, 1925.

Head wider than long, anteocellar setae much longer than interocellar setae. Antennae 7-segmented. Maxillary palpi 3-segmented. Pronotum with 2 pairs of long setae on posteroangulars, 3 pairs of posteromarginal setae in between. Meso- and metafurca without spinula. Setae on upper vein of forewing interrupted in middle, 3 distal setae, posterior fringe wavy. Abdominal tergites I-VIII and sternites II-VII with posteromarginal teeth. Only one species in this genus.

Fulmekiola serrata (Kobus) (Fig. 62)

Sugarcane thrips

Thrips serrata Kobus, 1892: 589, 590.
Physothrips serratus (Kobus); Karny, 1914: 369.
Stenothrips minutus Karny, 1915: 85.
Fulmekiola interrata Karny, 1925: 19, 55.
Fulmekiola serrata (Kobus); Priesner, 1938a: 29.
Baliothrips settatus (Kobus); Bhatti, 1969b: 375.

Female body length 1.2 mm on slide. Body brown; antennal segments I and II brown, III - V yellow, base of VI yellow, the rest of VI and VII brown; forewing brown; femora brown, tibiae and tarsi yellow.

Head produced in front of compound eyes, one pair of anteocellar setae near anterior margin of compound eyes, much longer than interocellar setae; interocellar setae situated in front of posterior ocelli, out of ocellar triangle. Cheeks longer than compound eyes, postocular region

with multiple transverse striae, antennae 7-segmented, segments III and IV with forked sense cone.

Pronotum squared, forewing with 5 scale setae; upper vein with 7-8 basal setae, 3 distal setae, far apart; lower vein with 13 setae; posterior fringe wavy.

Posteromargin of pleurites II-VIII and posterolateral margin of tergites II-VIII with teeth; laterals of tergites V-VIII with comb; tergites VIII without comb; tergite X split completely. Posteromargin of sternites II-VI with triangular teeth, longer on laterals and short in median; teeth of sternite VII only on lateral margin; sternites II-VI with 3 pairs of posteromarginal setae.

Male color and shape similar to female, posteromargin of abdominal tergites III-VIII with short spine-like setae, sternites III-VII with glandular area.

Distribution: Taiwan, China, Japan, Vietnam, Pakistan, Bangladesh, Malaysia, Philippines, Indonesia, Mauritius.

Habitat: *Saccharum* sp., *Phragmites communis*.

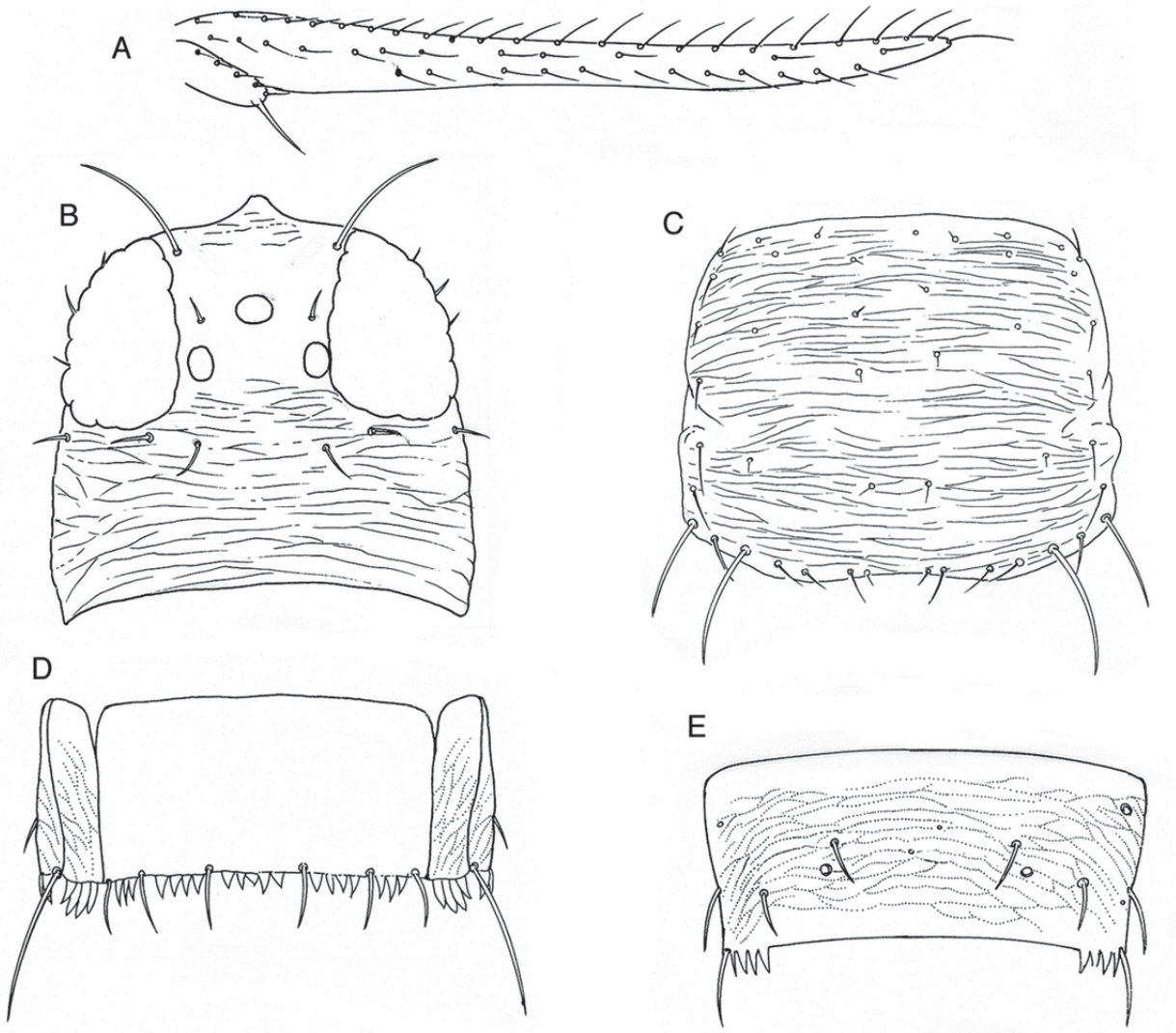

Fig. 62. *Fulmekiola serrata* (♀) A. forewing; B. head; C. pronotum; D. sternite and pleurites VI; E. tergite VI.

Genus *Lefroyothrips* Priesner

Lefroyothrips Priesner, 1938b: 499. Type species: *Taeniothrips (Lefroyothrips) lefroyi* (Bagnall, 1913).

Postocular region, especially cheeks, with transverse fold-like striae. Interocellar setae short, 2 ocular setae behind each posterior ocellus. Antennae 8-segmented, distal portion of segments III and IV vasiform. Pronotum relatively small, 2 long setae on each posteroangular, 3 pairs of setae on median of posterior margin. Forewing with brownish markings. Male with 10 spines on inner side of hind tibia. Abdominal tergite IX with 3 pairs of stout setae; sternites with glandular areas. Four species in the world.

Lefroyothrips lefroyi (Bagnall) (Fig. 63)

Tea flower thrips

Physothrips lefroyi Bagnall, 1913b: 292.
Amblythrips lefroyi (Bagnall); Bhatti, 1969b: 374.
Lefroyothrips lefroyi (Bagnall); Ananthakrishnan, 1971: 124, 125, 134.
Ceratothrips lefroyi (Bagnall); Jacot-Guillarmod, 1974: 735.

Female body length 1.5-2.0 mm on slide. Head and thorax yellowish brown, abdomen brown with yellowish laterals, tergites II-VIII with dark brown antecostal ridges, anterior 1/3 of tergite IX yellowish. Antennal segment I brown, II dark brown, III grayish brown except light yellow at base and distal end, IV dark brown with base and light yellow, basal half of V light yellow and

distal half dark brown, VI dark brown, VII and VIII grayish brown; forewing pale brown with 3 darker areas at subbasal, median and subapical areas; legs yellow.

Head as wide as long, several transverse striae behind compound eyes, cheeks slightly convex, with fold-like striae. Interocellar setae shorter than length of ocellus, arising between centers of anterior and posterior ocelli. Two straightly arranged setae behind posterior ocellus. Maxillary palpi 3-segmented. Antennae 8-segmented; segments III and IV in equal length, vasiform, with forked sense cone; segments V and VI in equal length.

Pronotum with 2 long setae on each of posteroangular, 3 pairs of posteromarginal setae in between, median pair longest. Forewing with over 40 costal setae, upper vein with 7 basal setae, one median setae and 2 distal setae; lower vein with 14-17 setae. A row of more than 10 spines on hind tibia, distal end with 3 stout spine; tarsi 2-segmented.

Abdominal tergites II-VIII smooth, with transverse striae only on laterals; posterior comb of tergite VIII dense and complete; tergite X split incompletely. Sternites without discal setae.

Male similar to females but smaller, body length 1.5-1.6 mm on slide. Body yellow color; antennal segments I- V light yellow except distal 1/3 brownish, VI-VIII brown. Tergite IX with 3 pairs of stout and dark thorn-like setae, anterior median pair stoutest and shortest, posterior median pair thinnest.

Distribution: Taiwan, China, India, Indonesia.

Habitat: *Thea sinensis*.

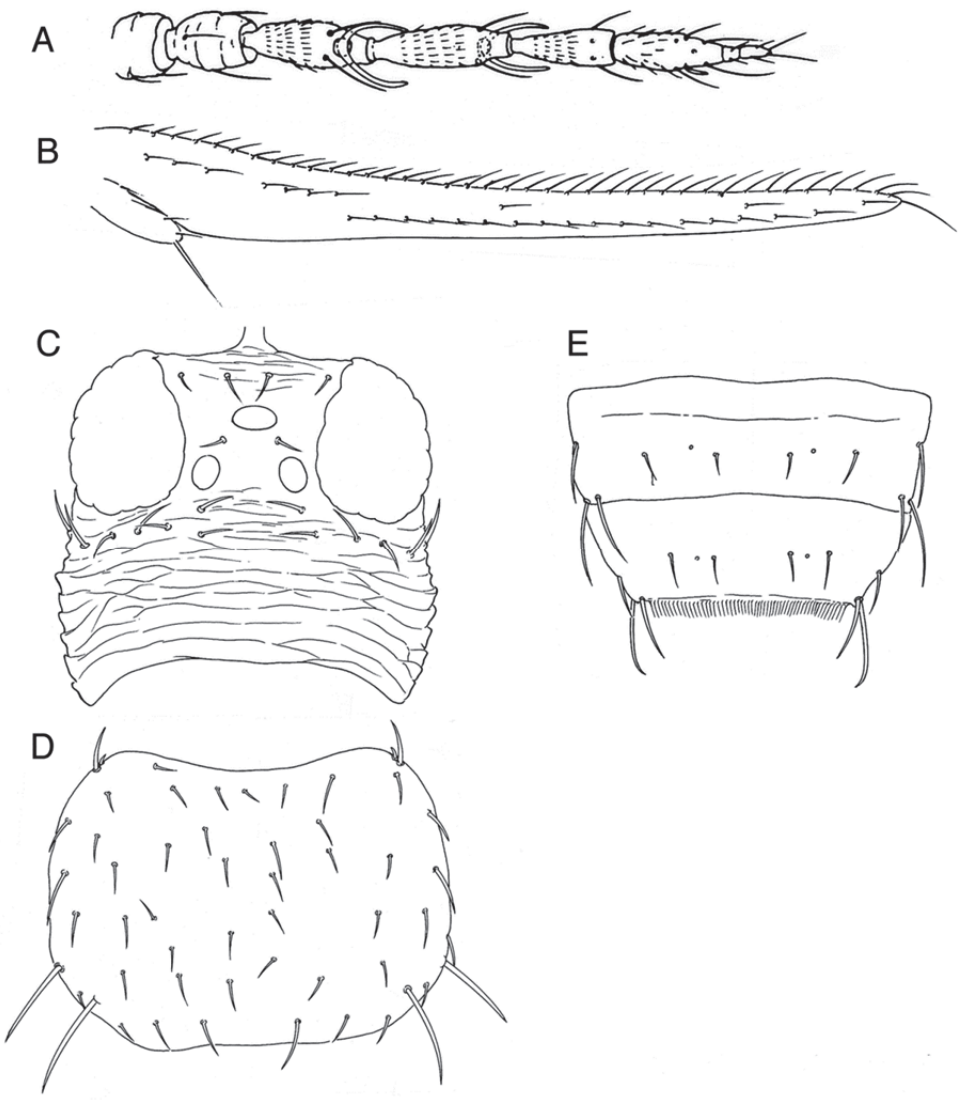

Fig. 63. *Lefroyothrips lefroyi* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. tergites VII and VIII.

Genus *Megalurothrips* Bagnall

Megalurothrips Bagnall, 1915: 589. Type species: *Megalurothrips typicus* Bagnall, 1915.

Head wider than long, cheeks parallel. One pair of long interocellar setae situated in front of posterior ocelli. Antennae 8-segmented. Pronotum with 2 long setae each on posteroangulars. Forewing apex brown, lower vein setae even and complete, upper vein with 2 distal setae. Abdominal tergite VIII with 3-4 rows of microtrichia near anteroangular. Posterior comb on laterals, lacking in median. Tergites IX and X long. Male without glandular areas. Thrips of this genus often found on legume flowers. About 13 species in the world.

Key to species of *Megalurothrips* in Taiwan

1. Antennal segments I and II dark brown, III and IV and most of V light yellow; setae of abdominal sternite VII situated on posterior margin ..... *typicus*
-- Antennal segments in uniform color, or at most paler with segment III; abdominal sternite VII with one pair of median setae situated in front of posteromargin 2

2. Antennae dark brown; body dark brown, setae dark and stout..... *distalis*

-- Antennal segment III in lighter color, yellow or light brown 3

3. Antennal segments III and IV l/w about 2.8/1..... *usitatus*
-- Antennal segments III and IV longer, l/w about 3.7/1.....*formosae*

Megalurothrips distalis (Karny) (Fig. 64)

Taeniothrips distalis Karny, 1913a: 122.

Frankliniella vitata Schmutz, 1913: 1019, 1023.

Taeniothrips vitata (Schmutz); Karny, 1914: 365.

Physothrips brunneicornis Bagnall, 1916a: 218.

Taeniothrips brunneicornis (Bagnall); Moulton. 1928b: 325.

Taeniothrips morosus Priesner, 1938b: 476, 511, 526.

Taeniothrips ditissimus Ananthakrishnan & Jagadish, 1966: 250.

Taeniothrips nigricornis (Schmutz); Mound, 1968: 54, 59.

Megalurothrips morosus (Priesner); Bhatti, 1969a: 242.

Megalurothrips distalis (Karny); Bhatti, 1969a: 240.

Female body length 1.6-2.2 mm on slide. Body dark brown; antecostal ridge on abdominal tergites I-VIII dark brown; antennae dark brown; forewing with basal and subapical transparent areas, the rest brown; fore femora brown, fore tibiae yellow, mid and hind femora and tibiae dark brown, all tarsi yellow.

Head wider than long, cheeks parallel. Several transverse striae behind compound eyes. Two pairs of short anteocellar setae, interocellar setae long, situated inside ocellar triangle, behind anterior margin of posterior ocelli. One short seta behind posterior ocellus, 4 pairs of short setae behind compound eyes. Antennae 8-segmented, segments III and IV vasiform, with forked sense cone.

Pronotum with several weak transverse striae, 2 long setae on posteroangular, 4 pairs of posteromarginal setae in between, median pair longest. Mesofurca with spinula, metafurca without spinula. Forewing with about 30 costal setae, upper vein with 20 setae from base to center, 2 distal setae in dark area; lower vein with19 setae, arranged evenly. Hind tibia with a row of 5-8 spines.

Abdominal tergite VIII with several rows of microtrichia on laterals; tergite VIII with posterior comb only on laterals, lacking in middle; tergite X as wide as long, split partially.

Male smaller and paler. Antennae brown, segments III and IV slender, V short, VI stout and long. Anteromarginal setae and median posteromarginal setae of pronotum longer than those of female. Abdominal tergite IX with a pair of thorn-like setae, sternites without glandular area.

Distribution: Taiwan, Japan, Korea, China, Philippines, India, Sri Lanka, Indonesia, Fuji.

Habitat: Found on flowers of various plants, especially common on legumes. In Taiwan it was found on *Pueraria lobata, phrosia* sp., *aseolus vulgaris, ycine* sp*., rcinia spicata* and weeds.

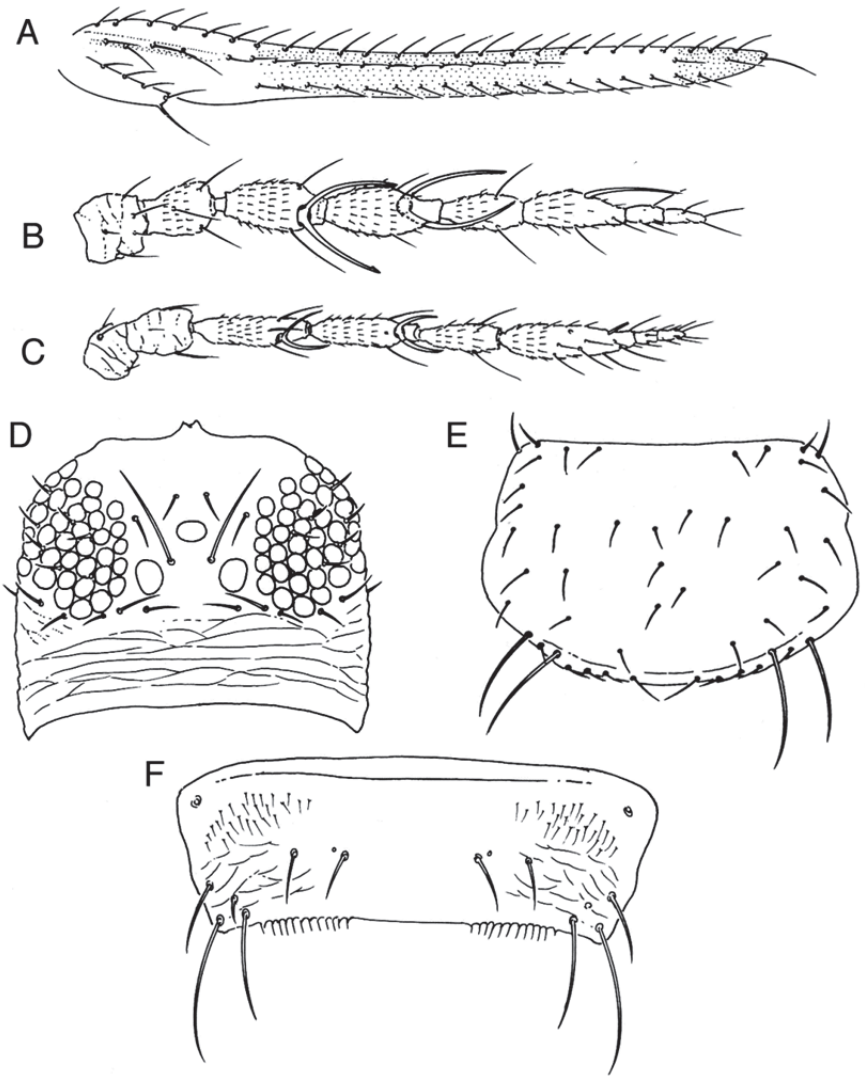

Fig. 64. *Megalurothrips distalis* (♀) A. forewing; B. antenna (♀); C. antenna (♂); D. head; E. pronotum; F. tergite VIII.

Megalurothrips formosae (Moulton)

Taeniothrips formosae Moulton, 1928b: 98, 325.
Megalurothrips formosae (Moulton); Bhatti, 1969a: 241.

Female body length 1.65 mm on slide. body dark brown; antecostal ridge on abdominal tergites I-VIII dark brown; antennal segments I and II dark brown, III yellow, base of IV yellow and apex brown, V brown with pale base, VI-VIII dark brown; forewings with basal and subapical transparent areas, the rest brown; femora brown, tibiae yellow with inner and outer margins brown, tarsi yellow.

Head wider than long, cheeks parallel. Two pairs of short anteocellar setae, interocellar setae long, situated inside ocellar triangle, between centers of 2 posterior ocelli. One short seta behind posterior ocellus, 3 pairs of short setae behind compound eyes. Antennae 8-segmented, segments III and IV vasiform, with forked sense cone.

Pronotum with 2 long setae on posteroangular, 4 pairs of posteromarginal setae in between, median pair longest. Mesofurca with spinula. Forewing with about 23 costal setae, upper vein with 16 setae from base to center, 2 distal setae in dark area; lower vein with15 setae.

Abdominal tergite VIII with posterior comb only on laterals, lacking or minute in middle. Sternite VII with median pair of setae situated in front of posterior margin; sternites without discal setae.

Distribution: Taiwan, Indonesia.

Habitat: *Canavalia obtusifolia*, *Canavlia ensiformis*.

Remark: Female was described according the original paper by Moulton (1928b)

Megalurothrips typicus Bagnall (Fig. 65)

Megalurothrips typicus Bagnall, 1915: 590.
Megalurothrips setipennis Karny, 1925: 32, 54.
Taeniothrips varicornis Moulton, 1928c: 292.
Taeniothrips centrispinosus Priesner, 1938b: 474, 511, 525.
Taeniothrips setipennis (Karny); Priesner, 1938b: 510, 511, 526.
Taeniothrips typicus (Bagnall); Mound, 1968: 54, 61.

Female body length 1.6-2.1 mm on slide. Dark brown, head and thorax orang brown, abdomen brown, tergites I-VIII with dark antecostal ridge; antennal segments I and II dark brown, III and IV yellow, distal end of IV light brown, V basal 1/2-1/3 yellow, distal end brown, VI-VIII brown; forewing with basal and subapical transparent areas, the rest brown; legs dark brown, fore tibiae yellow, tarsi yellow.

Head wider than long, shorter than thorax, cheeks parallel. Several transverse striae behind compound eyes. Two pairs of short anteocellar setae, interocellar setae long, situated inside ocellar triangle, between centers of anterior and posterior ocelli. One short seta behind posterior ocellus, 3 pairs of short setae behind compound eyes. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone.

Pronotum with several weak transverse striae, 2 long setae on posteroangular of pronotum, 4 pairs of posteromarginal setae in between, median pair longest. Mesofurca with spinula, metafurca without spinula. Forewing with about 24-27 costal setae, upper vein with 13-15 setae from base to center, 2 distal setae in dark area; lower vein with14-17 setae, arranged evenly. Hind tibia with a row of 5-8 spines.

Abdominal tergite VIII with several rows of microtrichia on laterals; tergite VIII with posterior comb only on laterals, lacking in middle; tergite X twice wide as its long, split partially. Sternite

VII with median pair of setae on posterior margin, sternites without glandular area.

Distribution: Taiwan, Philippines, India, Malaysia, Indonesia, Guan.

Habitat: *Pueraria mintana*, *Sesbaniagrandiflora*, *Thea sinensis*, *Bauhinia pupurea*, *Mangifera india*.

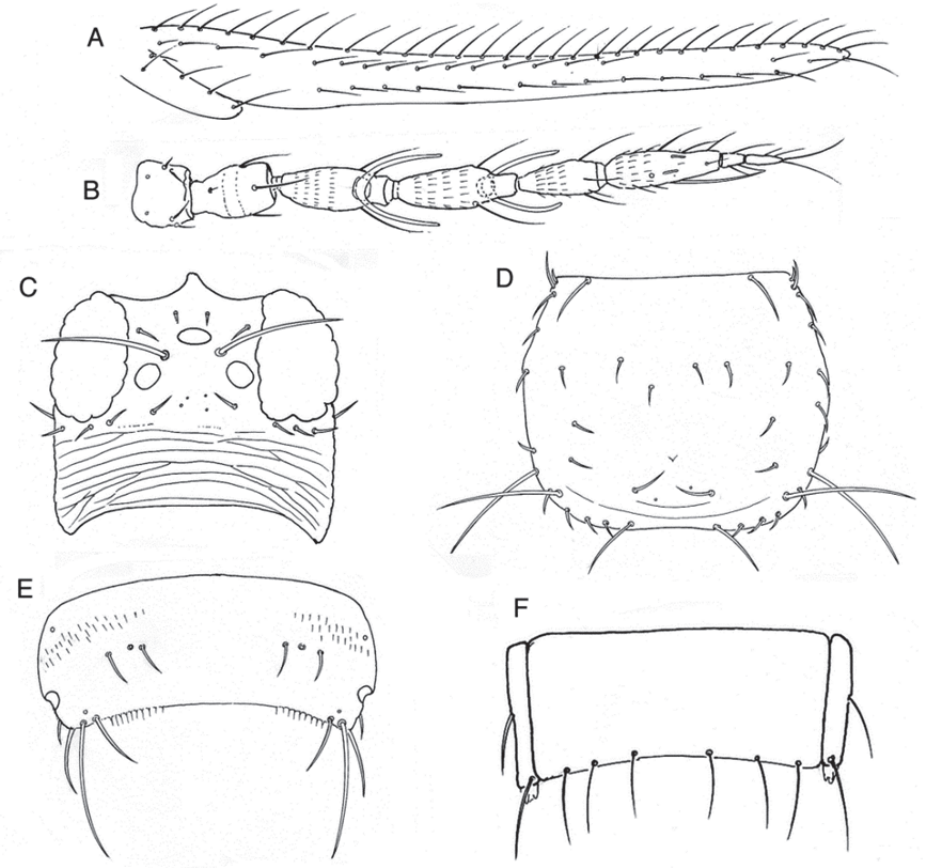

Fig. 65. *Megalurothrips typicus* (♀) A. forewing; B. antenna: C. head; D. pronotum; E. tergite VIII; F. sternite VII.

Megalurothrips usitatus (Bagnall) (Fig. 66)

Bean flower thrips

Physothrips usitatus Bagnall, 1913b: 293.
Frankliniella nigricornis Schmutz, 1913: 1018, 1020.
Frankliniella obscuricornis Schmutz, 1913: 1019, 1022.
Physothrips mjobergi Karny, 1920: 37.
Taeniothrips longistylus Karny, 1922: 110.
Odontothrips longistylus (Karny); Priesner, 1926: 122.
Taeniothrips distalis Karny; Takahashi, 1935: 69, 70, 72.
Megalurothrips usitatus (Bagnall); Sakimura, 1972: 192.

Female body length 1.4-1.6 mm on slide. Body brown to dark brown, head and thorax orange brown, abdomen brown or light brown; antecostal ridge on abdominal tergites I-VIII dark brown; antennal segments I and II dark brown, III yellow, IV-VIII brown; forewing with basal and subapical transparent areas, the rest brown; fore legs yellow, outer margin of femora darker, mid and hind femora and tibiae brown, distal ends of tibiae yellow, all tarsi yellow.

Head wider than long, shorter than thorax, cheeks parallel. Several transverse striae behind compound eyes. Two pairs of short anteocellar setae, interocellar setae long, situated between centers of anterior and posterior ocelli. One short seta behind posterior ocellus, 4 pairs of short setae behind compound eyes. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone.

Pronotum with several weak transverse striae, 2 long setae on posteroangular of pronotum, 4 pairs of posteromarginal setae in between, median pair longest. Mesofurca with spinula,

metafurca without spinula. Forewing with about 21-26 costal setae, upper vein with 11-14 setae from base to center, 2 distal setae in dark area; lower vein with 9-14 setae, arranged evenly. Hind tibia with a row of 5-8 spines.

Abdominal tergite VII with median pair of setae in front of posterior margin; VIII with several rows of microtrichia on lateral; tergite VIII with posterior comb only on laterals, lacking in middle; tergite X as wide as long, split partially. Sternites without discal setae.

Male smaller and paler. Antennae segments I and II dark brown, III and base of IV yellow, the rest of IV and V-VIII brown. Abdominal tergite IX with a pair of thorn-like setae, sternites without glandular area.

Distribution: Taiwan, China, Japan, Philippines, Thailand, India, Indonesia, Australia, Sri Lanka, Papua New Guinea, Samoa.

Habitat: Found on flowers of various plants, especially common on legumes. In Taiwan it was found on legumes such as *Phaseolus vulgaris*, and *Gercinia spicata*, *Pongamia pinnata*, *Arachis hypogaea*, *Zea mays*, *Gomphrena globosa*, *Ixeris chinensis*, *Luffa cylindrical*, *Setaria italic*, *Pueraria Montana*, *Bidens biternata*, *Bauhinia tomentosa*, *Mimosa pudica*, *Tridax procumbens, Duranta repens, Stellaria aguatica*, *Sesamum orientale*, *Paederia scandens*, *Momordica charantia*.

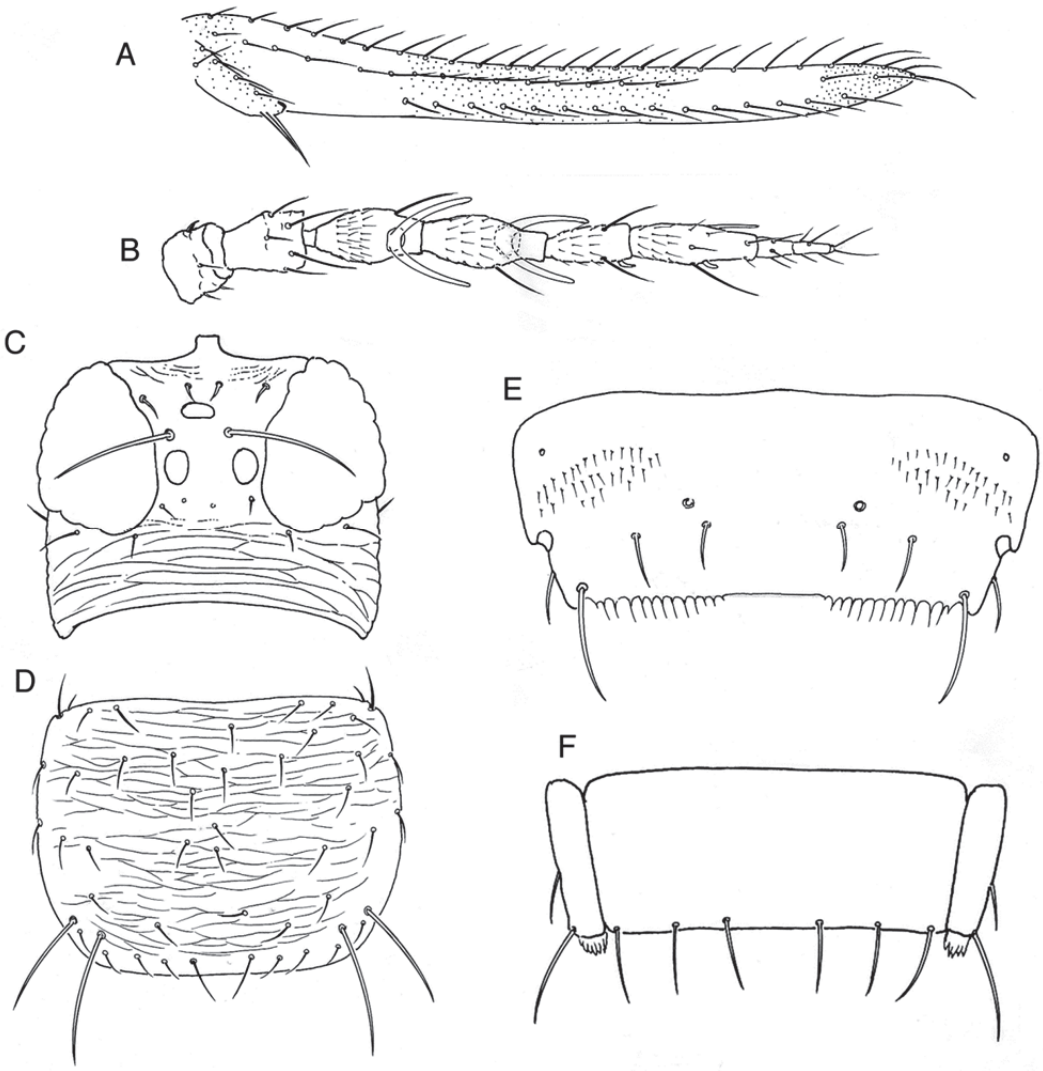

Fig. 66. *Megalurothrips usitatus* (♀) A. forewing; B. antenna; C. head; D. pronotum; E. tergite VIII; F. sternite VII.

Genus *Microcephalothrips* Bagnall

Microcephalothrips Bagnall, 1926a: 113.

Type species: *Microcephalothrips* (*Thrips*) *abdominalis* (D. L. Crawford, 1910).

Head small, antennae 7-segmented. Pronotum with 2 long setae each on posteroangular, vein setae of forewing short and sparse. Posterior margin of abdominal tergites I-VIII serrated. Only one species in this genus.

Microcephalothrips abdominalis (D. L. Crawford) (Fig. 67)

Composite thrips

Thrips abdominalis D. L. Crawford, 1910: 157.
Thrips femoralis Jones, 1912: 4.
Thrips crenatus Watson, 1922: 35.
Thrips microcephalus Priesner, 1923b: 116.
Stylothrips brevipalpis Ramakrishna, 1925: 871.
Microcephalothrips abdominalis (D. L. Crawford); Bagnall, 1926a: 114.
Thrips (Ctenothripella) gillettei Moulton, 1926a: 126.
Paraphysopus burnsi Girault, 1927: 2.
Microcephalothrips brevipalpis (Karny); Patel & Patel, 1953: 598, 606.

Female body length 0.8-1.1 mm on slide. Body brown; antennae brown, segment III, basal half of IV and a basal ring of V paler; forewings grayish brown; Legs brown, distal ends of tibiae and all tarsi paler.

Head small, about as long as wide; one pair of anteocellar setae, one pair of interocellar setae situated in front of posterior ocelli, out of ocellar triangular area; with transverse striae behind compound eyes. Antennae 7-segmented, segments III and IV with forked sense cone. Maxillary palpi 3-segmented.

Pronotum wider posteriorly, 2 long setae on each posterior angular, a row of short setae in posterior margin, usually 5 or 6 pairs, rarely 4 pairs. Metanotum with striae. Apex of forewing curved upward slightly, 20-25 costal setae, vein setae small, upper vein with 6-8 setae and 3 distal setae; lower vein with 5-8 setae, interval between setae larger toward apex. Tarsi 2-segmented.

Abdominal tergites I-VIII with transverse striae, posteromargins serrated with triangular teeth; posterior comb on tergite VIII complete; tergite X split completely. Sternites with discal setae.

Male macropterous or brachypterous, smaller and paler than female. **Macropterous**: Head and thorax yellowish brown, abdomen grayish brown; antennal segments I and II light yellow, other segments same color as female; abdominal sternites III-VII with small and rounded glandular areas. **Brachypterous**: Body brown, antennae same color as female; wings reduced to wing pads.

Distribution: Taiwan, China, Japan, Philippines, Indonesia, Australia, Guan, Hawaii, US, Canada, Cuba, Porto Rico, Argentina, Egypt, India.

Habitat: *Bidens biternata*, *Panicum repens*, *Brachiaria mutica*, *Rosa hybrid*, *Litchi chinensis*, *Salvia splendens*, *Compositae*, *Cosmos* sp., *Ageratum* sp., and many other legumes.

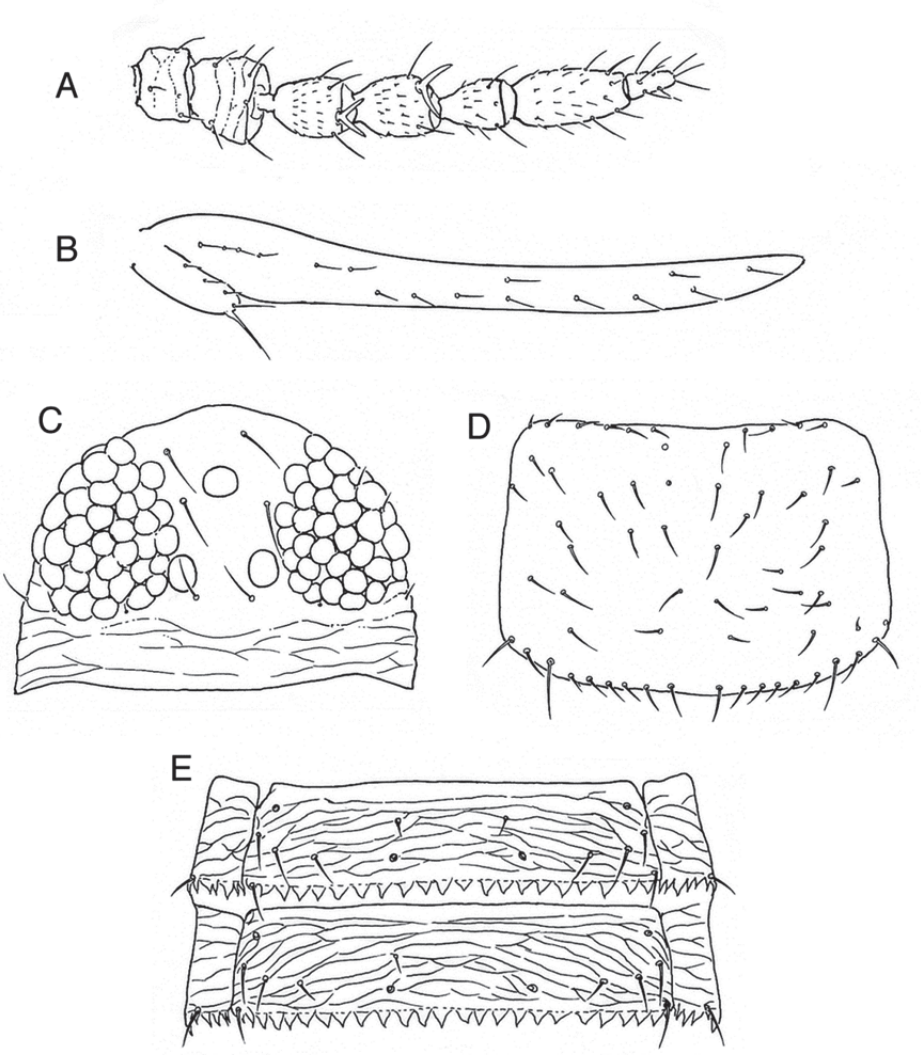

Fig. 67. *Microcephalothrips abdominalis* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. tergites V and VI.

Genus *Mycterothrips* Trybom

Mycterothrips Trybom, 1910: 158. Type species: *Mycterothrips laticauda* Trybom, 1910.

Two pairs of anteocellar setae, one pair of interocellar situated between posterior ocelli. Antennae 8-segmented. Pronotum with 2 long setae each on posteroangulars, 2 pairs of inner setae. Mesofurca with spinula, metafurca with or without spinula. Upper vein of forewing with 2 distal setae, lower vein setae arranged evenly. Laterals of abdominal tergites II-VII with transverse striae, with or without obvious microtrichia, with posterolateral teeth; posterior comb on tergite VIII complete. Sternites with or without discal setae. Male antennal segment VI normal or a little longer, or longer and hairy; abdomen without sternal glandular areas. Over 30 species in the world.

Key to species of *Mycterothrips* in Taiwan

1. Female abdominal sternites IV-VI or IV-VII with a pair of discal setae; male antennal segment VI hairy, about 5 times as long as segment III..... *auratus*
-- Female abdominal sternites without discal setae 2

2. Female abdominal tergites II-VII with lateral transverse striae, and dense microtrichia on them..... 3
-- Female abdominal tergites II-VII with lateral transverse striae, without or, at most, with sparse microtrichia on them 4

3. Female antennal segments III and IV in different colors from segments II and V-VIII; male antennal segment VI about 1.4 times as long as segment III ..... *glycines*
-- Female antennal segments II – VIII in same color; male antennal segment VI hairy, about 4 times as long as segment III..... *ravidus*

4. Female abdominal tergites VI and VII with posterolateral comb of spines; abdomen in darker color toward posterior segments; male unknown ..... *caudibrunneus*
-- Female abdominal tergites VI and VII without posterolateral comb or microtrichia; abdominal segments in similar color; male antennal segment VI shorter than segment III ..... *araliae*

Mycterothrips araliae Takahashi (Fig. 68)

Taeniothrips araliae Takahashi, 1936: 434.
Mycterothrips araliae (Takahashi); Bhatti, 1978b: 185.

Female body length 1.4 mm on slide. Body yellow, abdomen in lighter color than head and thorax, laterals of thorax and abdomen somewhat orange; antennae brown, segment I whitish yellow, II brown, III brown with basal 1/3 and distal end paler, IV brown with base paler, V-VIII brown; forewings brown; legs yellow.

Head wider than long, transverse striae posterior to compound eyes. Two pairs of anteocellar setae, situated in front of, and on sides of, anterior ocellus, one pair of interocellar setae between 2 posterior ocelli. One seta behind each posterior ocellus, longer than other ocular setae. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV about same length and longer than other segments, vasiform on both ends, with forked sense cone.

Posteroangulars of pronotum with 2 pairs of long setae, about same length; 2 pairs of posteromarginal setae in between, median pair longer; about 56 discal setae (including anteromarginal setae). Meso- and metafurca spinula present. Upper vein of forewing with 7 or 8 basal setae, 2 distal setae; lower vein with 13 setae, arranged evenly.

Several rows of transverse striae and brown spots on laterals of tergites I-VIII; 2 pairs of setae on outer sides of spots, these setae longer toward posterior segments; posterior comb on tergite VIII complete. Sternites without discal setae.

Male color and body shape similar to female, but smaller. Antennal segments III and IV about same length, longer than other segments; VI slightly shorter. Posterior end of tergite IX with 3 pairs of setae, median pair shortest.

Distribution: Taiwan.

Habitat: Flowers of *Aralia bipinnata*.

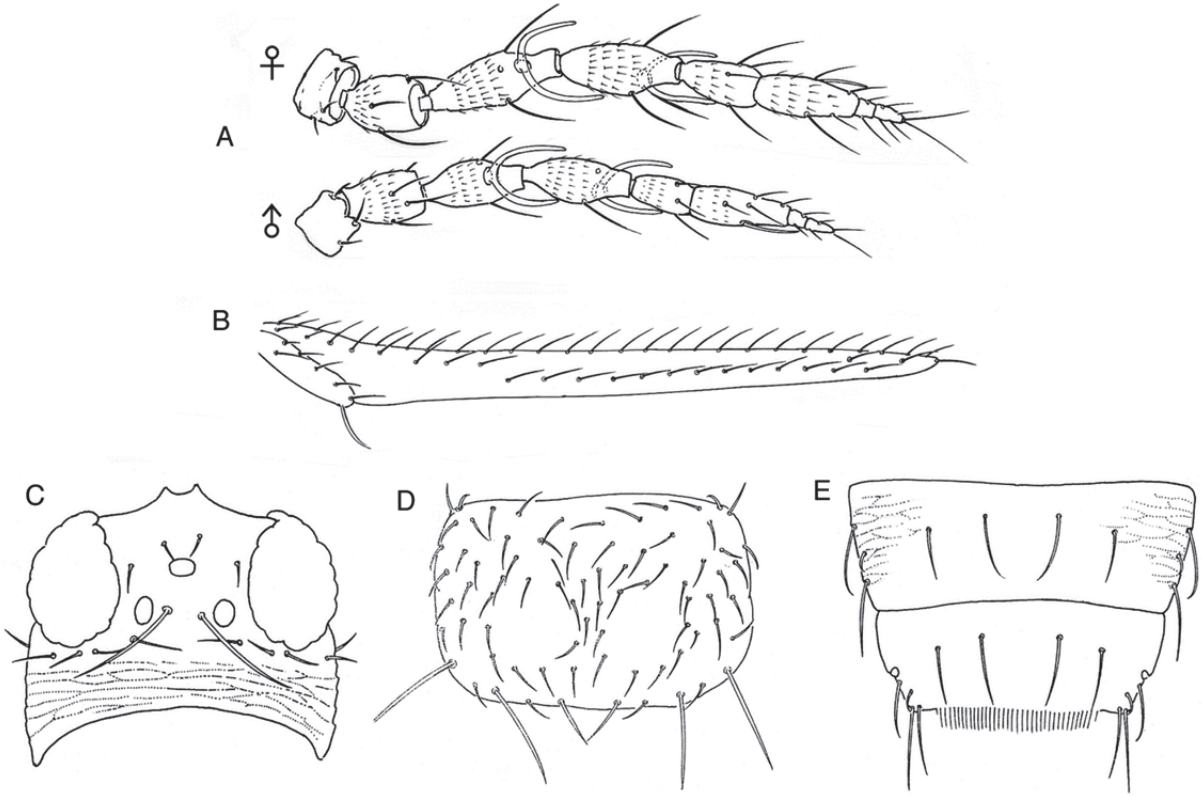

Fig. 68. *Mycterothrips araliae* A. antenna upper ♀, lower ♂; (♀) B. forewing; C. head; D. pronotum; E. tergites VII and VIII.

Mycterothrips auratus Wang (Fig. 69)

Mycterotyrips auratus Wang, 1999: 232.

Female body length 1.0-1.1 mm on slide. Head and thorax yellowish brown, abdomen brown; antennal segment I light yellow, II and III pale brown, II darker, IV- VIII brown; forewings light yellow; legs light yellow.

Head wider than long, with transverse striae behind compound eyes. Two pairs of anteocellar setae, one pair of interocellar setae between 2 posterior ocelli. One seta behind each posterior ocellus, longer than other ocular setae. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone.

Posteroangulars of pronotum with 2 pairs of long setae, about same length; 2 pairs of posteromarginal setae in between, median pair longer; about 28 discal setae (anteromarginal setae included). Meso- and metafurca spinula present. Upper vein of forewing with 7 or 8 basal setae, 2 distal setae; lower vein with 13-16 setae, arranged evenly.

Weak transverse striae on laterals of tergites I-VII; posterior comb on tergite VIII complete. Sternites IV-VI or IV-VII with one pair of discal setae.

Male brown; antennae brown, segment I in paler color. Structure of antennae quite different from female. Segment V short, bowl-shaped, VI with long dense hair, VII and VIII short and small. Posterior end of tergite IX with 3 pairs of setae, median pair shortest.

Distribution: Taiwan.

Habitat: *Morus* sp.

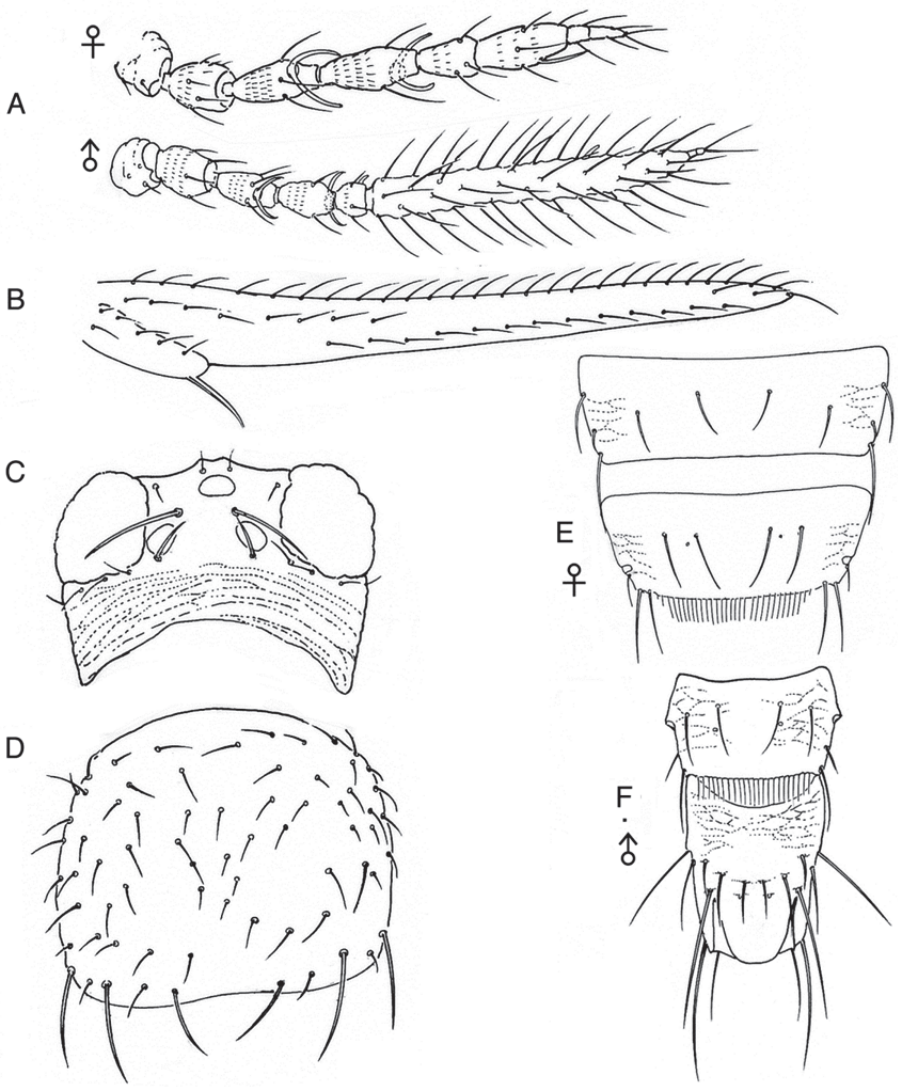

Fig. 69. *Mycterothrips auratus* A. antenna; B-E (♀): B. forewing; C. head; D. pronotum; E. tergies VII and VIII; F. tergites VIII-X.

Mycterothrips caudibrunneus Wang (Fig. 70)

Mycterothrips caudibrunneus Wang, 1999: 234.

Female body length 1.1 mm on slide. head and thorax yellow, abdomen grayish brown, darker toward posterior segments, segments VI-X brownish; antennal segment I pale brown, II brown, bases of III and IV grayish brown, the rest of antennae brown; legs light yellow; forewings light brown; legs yellow.

Head wider than long, transverse striae posterior to compound eyes. Two pairs of anteocellar setae, situated in front of, and on sides of, anterior ocellus, one pair of interocellar setae between 2 posterior ocelli. One seta behind each posterior ocellus, longer than other ocular setae. Maxillary palpi 3-segmented. Antennae 8-segmented, distal end of segments III not vasiform, III and IV with forked sense cone, III or IV about same length as VI.

Posteroangulars of pronotum with 2 pairs of long setae, about same length; 2 pairs of posteromarginal setae in between, median pair longer; about 48 discal setae (anteromarginal setae included). Meso- and metafurca spinula present. Upper vein of forewing with 7 or 8 basal setae, 2 distal setae; lower vein with 10-11 setae, arranged evenly.

Rows of transverse striae on laterals of tergites II-VII; sparse and weak microtrichia only on transverse striae on posterior portion of tergites VII and VIII; a row of microtrichia on posterolateral margin of tergites II-VII, stronger toward posterior segments, form triangular teeth on tergites VI and VII; posterior comb on tergite VIII complete. Sternites without discal setae.

Male unknown.

Distribution: Taiwan.

Habitat: *Miscanthus* sp., *Ampelepaia* sp., weeds.

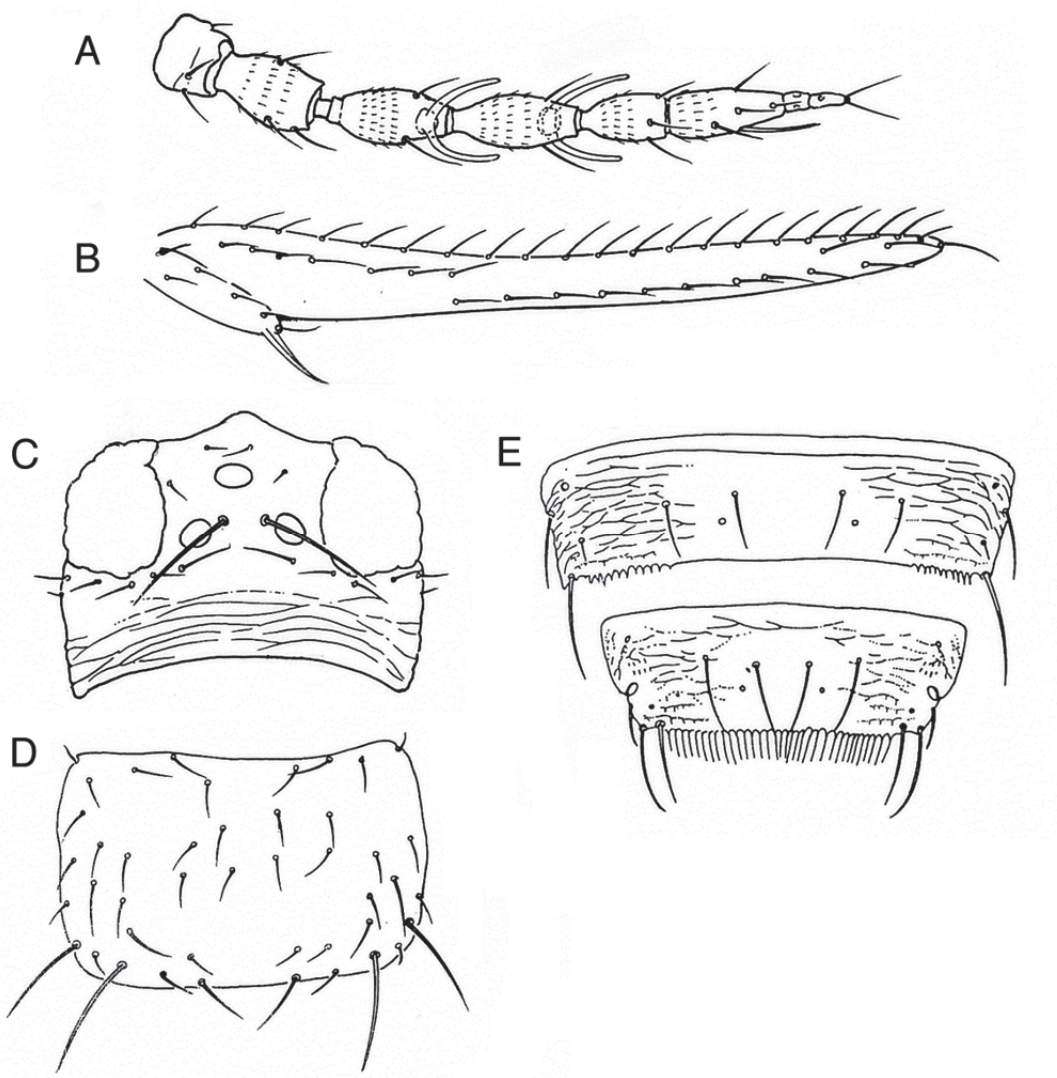

Fig. 70. *Mycterothrips caudibrunneus* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. tergites VII and VIII.

Mycterothrips glycines (Okamoto) (Fig. 71)

Euthrips glycines Okamoto, 1911: 221.
Physothrips glycines (Okamoto); Karny, 1912: 340.
Taeniothrips (Physothrips) glycines (Okamoto); Moulton, 1928b: 326.
Mycterothrips glycines (Okamoto); Bhatti, 1969b: 378.

Female body length 1.6 mm on slide. Grayish yellow, laterals of thorax and abdomen light orange; antennae segment I transparent yellow, II brown except distal end, III yellow with middle grayish, IV- VIII grayish brown but base of IVpaler; forewings brown; legs light yellow.

Head wider than long, transverse striae posterior to compound eyes. Two pairs of anteocellar setae, situated in front of, and on sides of, anterior ocellus, one pair of interocellar setae between 2 posterior ocelli. One seta behind each posterior ocellus, longer than other ocular setae. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III vasiform, about same length as VI, IV shorter, III and IV with forked sense cone.

Posteroangulars of pronotum with 2 pairs of long setae, about same length; 2 pairs of posteromarginal setae in between, median pair longer; 5-8 discal setae. Meso- and metafurca spinula present. Forewing with 27-29 costal setae, upper vein with 7 or 8 basal setae, 2 distal setae; lower vein with 12 setae, arranged evenly.

Multiple rows of transverse striae on laterals of tergites II-VIII; obvious microtrichia on these striae ; posterior comb on tergite VIII complete. Sternites without discal setae.

Male smaller. Antennae 3 times as long as head, segments VI longest, segment III only 2/3the length of VI, segments I-III light yellow to yellow, V-VIII dark brown.

Distribution: Taiwan.

Habitat: legumes, *Glycine max,* weeds.

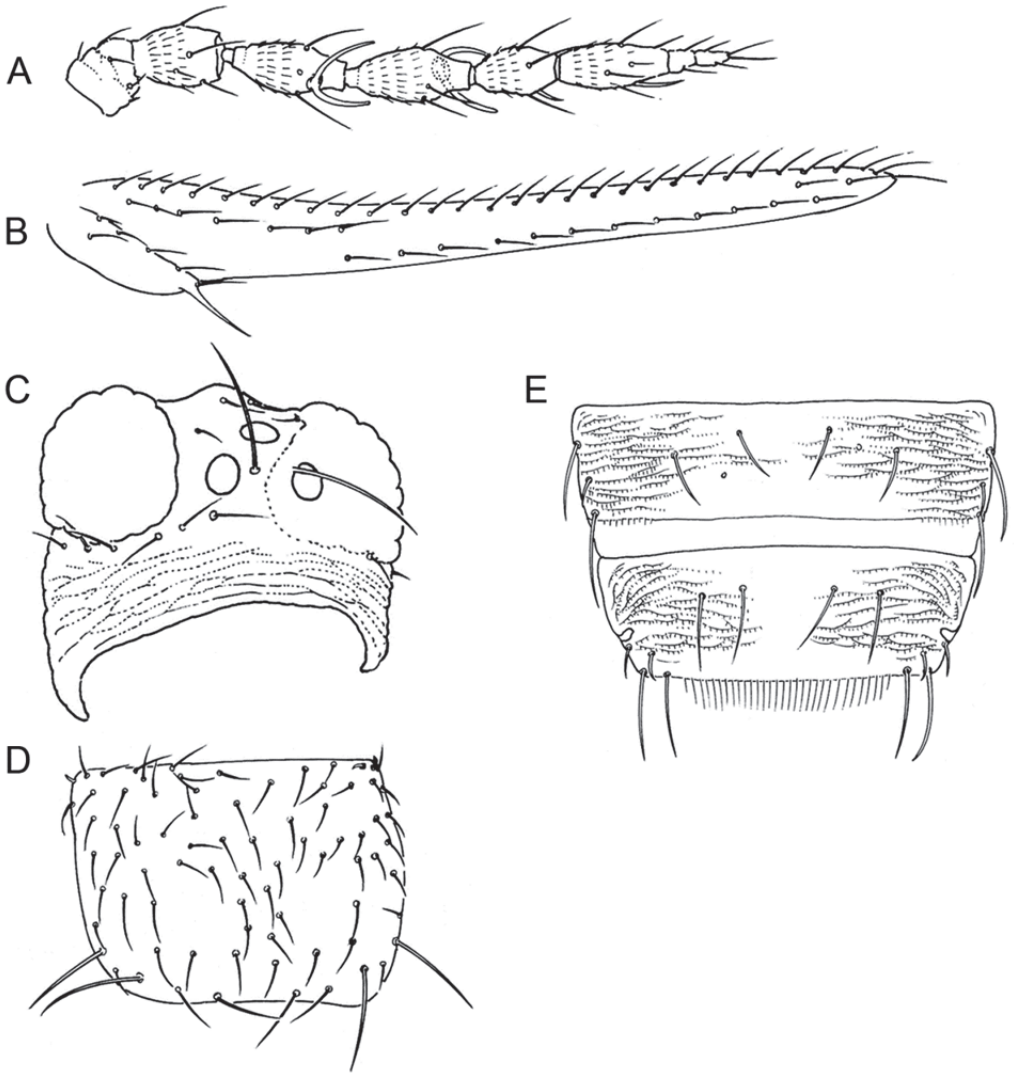

Fig. 71. *Mycterothrips glycines* (♀) A. antenna; B. forewing; C. head; D. pronotum; E. tergites VII and VIII.

Mycterothrips ravidus Wang (Fig. 72)

Mycterothrips ravidus Wang, 1999: 236.

Female body length 1.4 mm on slide. Body grayish brown, thorax and abdomen with brown spots, obvious on laterals of tergites II-VII; antennae segment I light brown, same color as head, the rest segments brown; forewings grayish brown; legs grayish brown.

Head wider than long, transverse striae posterior to compound eyes. Two pairs of anteocellar setae, situated in front of, and on sides of, anterior ocellus, one pair of interocellar setae between 2 posterior ocelli. One seta behind each posterior ocellus, longer than other ocular setae. Maxillary palpi 3-segmented. Antennae 8-segmented, segments III and IV with forked sense cone.

Posteroangulars of pronotum with 2 pairs of long setae, about same length; 2 pairs of posteromarginal setae in between, median pair longer; 46-48 discal setae. Meso- and metafurca spinula present. Upper vein of forewing with 7 or 8 basal setae, 2 distal setae; lower vein with 15-16 setae, arranged evenly.

Transverse striae and microtrichia obvious on laterals of tergites II-VII, last row on posterior margin; posterior comb on tergite VIII complete. Sternites without discal setae.

Male grayish brown, abdomen slender. Antennae brown, segment V bowl-shaped, VI long and hairy, VII and VIII short. Posteromargin of tergite VIII with slender and complete comb; median of tergites IX with 3 pairs of long setae. Sternites IV-VII with discal setae.

Distribution: Taiwan.

Habitat: *Liquidambar* sp., *Passiflora* sp., *Ficus* sp., fern, *Morus* sp, weeds.

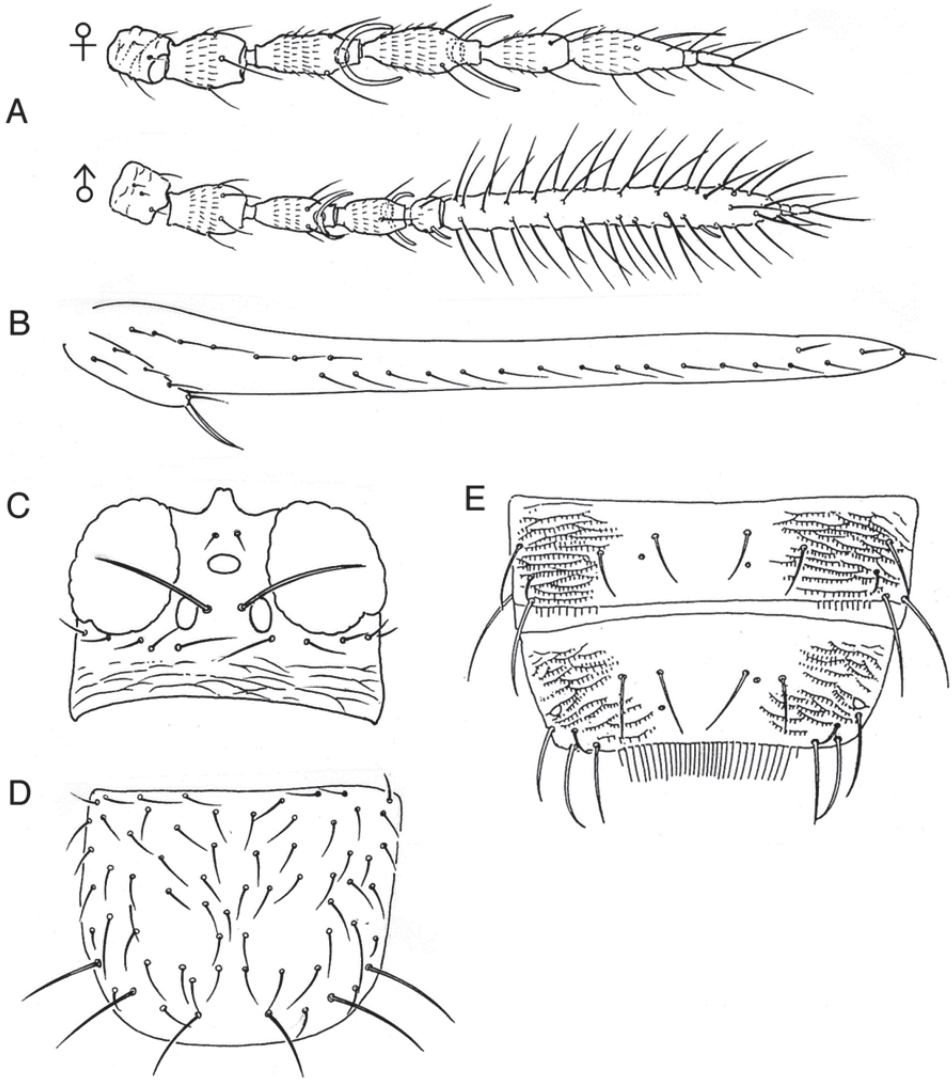

Fig. 72. *Mycterothrips ravidus* A. antenna (upper ♀, lower ♂); B(♀). forewing; C. head; D. pronotum; E. tergites VII and VIII.